INTERIM REPORT ON PHASE II OF THE SUBSURFACE INVESTIGATION AT TANKS 19T AND 20T AT THE C6 FACILITY

Woodward-Clyde Consultants

ENVIRONMENTAL COMPLIANCE

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INTERIM REPORT ON PHASE II OF THE SUBSURFACE INVESTIGATION AT TANKS 19T AND 20T AT THE C6 FACILITY

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FINAL

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INTERIM REPORT ON PHASE II OF THE SUBSURFACE INVESTIGATION AT TANKS 19T AND 20T AT THE C6 FACILITY

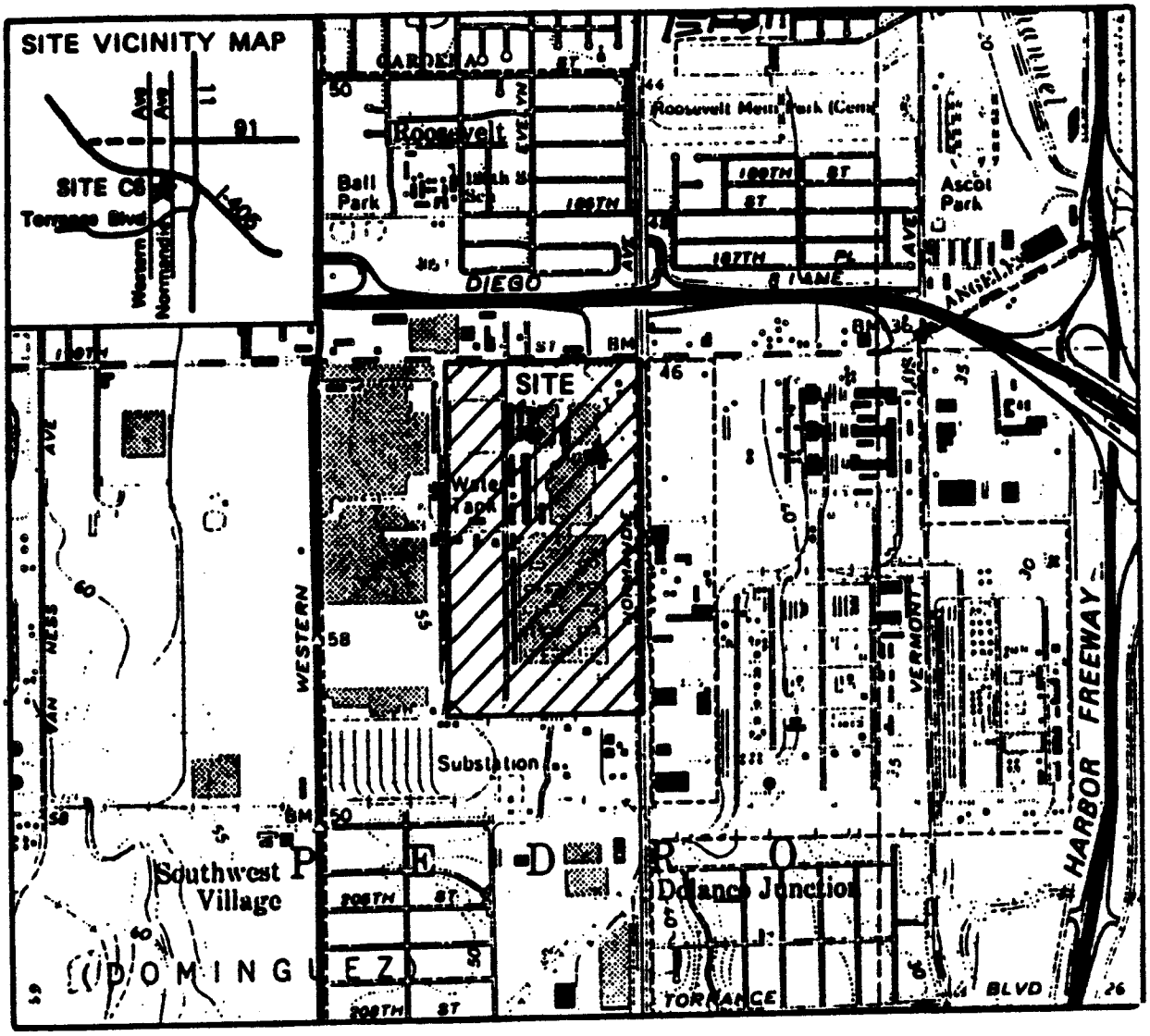
1.0 INTRODUCTION

The purpose of this report is to present the results of the Phase II subsurface investigation. This investigation was performed to evaluate the source of elevated concentrations of organic compounds in the soil and ground water near tanks 19T and 20T at Douglas Aircraft Company's C6 facility in Los Angeles, California. The facility location is shown on Figure 1.

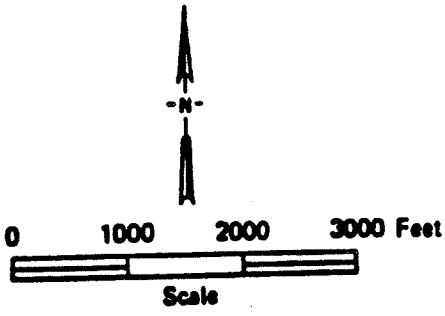
The results of Phase I of the investigation indicated the presence of petroleum hydrocarbons in the soil to a depth of 50 feet in the vicinity of tanks 19T and 20T. In addition, 1,1-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and benzene had been detected in water samples collected from observation well WCC-1, which was installed at a location thought to be downgradient of the tanks. The locations of borings and wells installed during the Phase I work are shown on Figure 2.

2.0 OBJECTIVE

The objective of this phase of the investigation was to evaluate the source of organic compounds in the soil and ground water near tanks 19T and 20T.

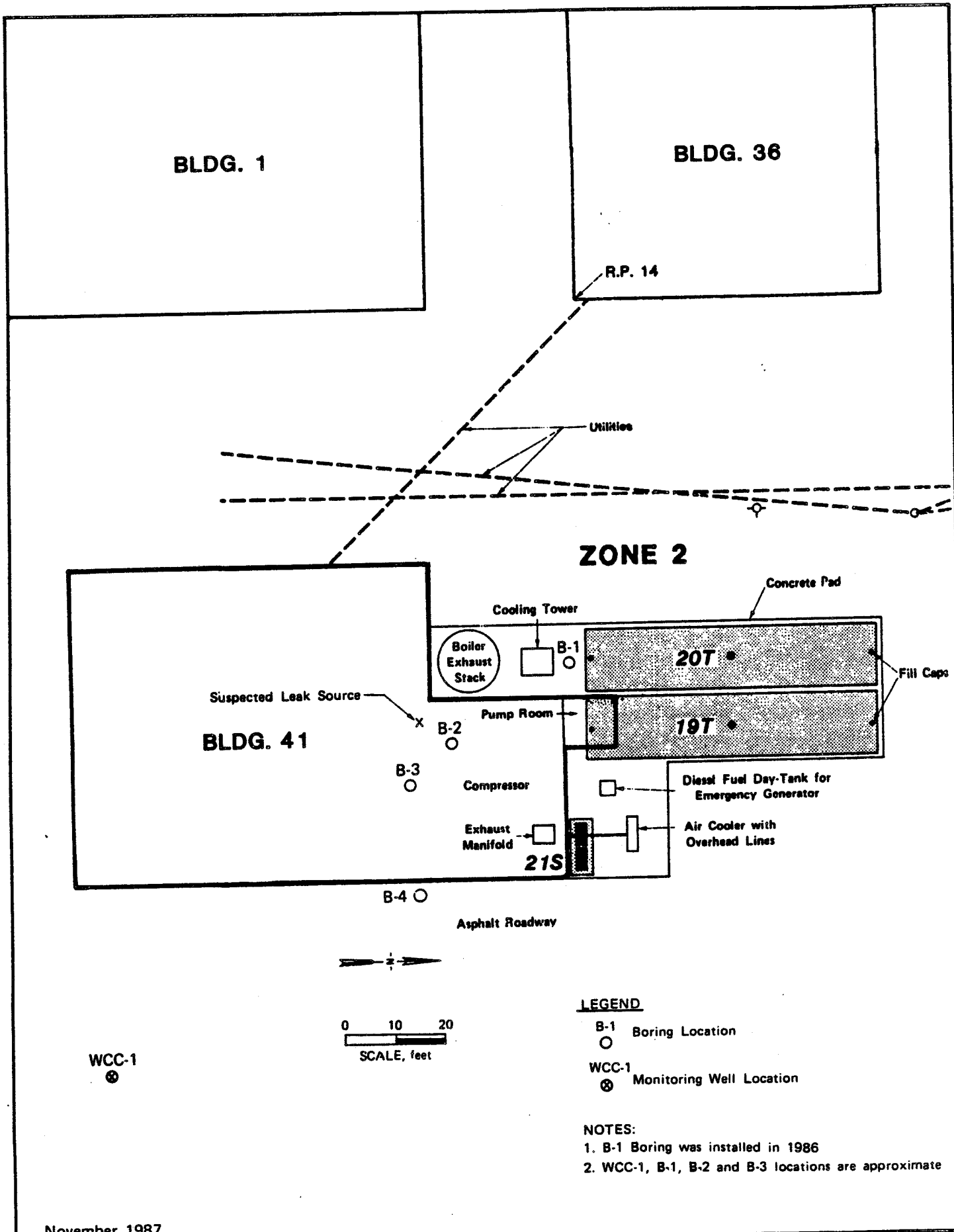


C6 FACILITY



Project: DOUGLAS AIRCRAFT CO. **Project No.** 41863A	C6 FACILITY LOCATION MAP	Fig. 1

WOODWARD–CLYDE CONSULTANTS



NOTES:
1. B-1 Boring was installed in 1986
2. WCC-1, B-1, B-2 and B-3 locations are approximate

November 1987

Project DOUGLAS AIRCRAFT CO. Project No. 41863B	LOCATION MAP FOR WCC-1, B-1, B-2, B-3, and B-4.	Fig. 2

3.0 DESCRIPTION OF THE FIELD PROGRAM

Phase II of the investigation was performed in the following manner. Three additional observation wells (WCC-2, WCC-3 and WCC-4) were installed at the locations shown on Figure 3. Details on the field program used during the installation of the wells are presented in Appendix A.

Well WCC-1 is located approximately 40 feet due east of Building 41, and was installed in March 1987. Well WCC-1 is downgradient with respect to the location of tank clusters 19T, 20T, and 15T to 18T (see Figure 3).

Well WCC-2 is situated between buildings 61 and 34. This well is considered to be the upgradient ground water observation well relative to the two tank clusters, and is approximately 400 feet northwest of tank cluster 15T to 18T.

Well WCC-3 is located at the northeast corner of Building 1, between the diesel tank cluster 19T, 20T, and the solvent tank cluster 15T to 18T. This well is also situated downgradient of solvent tanks 15T and 18T.

Well WCC-4 is approximately 100 feet southeast of Building 41, and is downgradient of tank clusters 19T, 20T, and 15T to 18T.

Boring B-4 was installed on May 26, 1987 by A & R Drilling Company (see Figure 2). This boring was installed to allow further evaluation of the vertical extent of petroleum hydrocarbons in the subsurface near tanks 19T and 20T. Borings B-1, B-2, and B-3 were installed during an earlier

evaluate whether organic compounds are present in the ground water at the site perimeter. A discussion on the optimum location for Well WCC-5 is presented in Section 6.0.

Ground surface elevations of observation wells WCC-1, -2, -3, and -4 were surveyed on 3 November 1987 by Rattray and Associates, Inc. of Santa Ana, California. The survey provided the ground water elevation data required to evaluate the direction of the ground water gradient.

4.0 RESULTS

4.1 Ground Water Elevations

Ground water elevation data collected on 6 November 1987 indicated that in the area defined by the four wells, the elevation of ground water from Mean Sea Level (MSL) varies from -21.41 to -21.94 feet. These elevations indicate that the water table is over 21 feet below MSL. The water levels from the deeper aquifers, are also below MSL. Water level information from 1983 indicates that the water levels in these deeper aquifers are at approximately -60 feet MSL (Los Angeles Flood Control District).

The low ground water levels found in the deep aquifers can be attributed to the reduced natural ground water recharge caused by urbanization of the Los Angeles Basin and the heavy use of ground water. Channelizing the Los Angeles and San Gabriel rivers also has significantly reduced recharge to the ground water system. The reduced recharge and heavy ground water extraction produce a ground water overdraft and a subsequent lowering of the water table. The ground water

phase of this investigation. Analytical data obtained from soil samples from these borings indicated that petroleum hydrocarbons were present to a depth of approximately 50 feet. The purpose of Boring B-4 was to evaluate how far below this 50-foot depth the hydrocarbons had penetrated. Boring B-4 was installed approximately 30 feet away from the suspected source of the release, and was slant drilled at an angle of 26 degrees from vertical, outside of the building. This boring had to be installed outside the building, because space restrictions prevented use of a large drill rig inside the building. The boring was terminated at a vertical depth of 54 feet.

Well logs from observation wells WCC-1, -2, -3, and -4 and Boring Logs for B-1, -2, -3, and -4 are presented in Appendix B.

On 30 October 1987, wells WCC-2, -3, and -4 were developed by Beylick Drilling Company of La Habra, California. The observation wells were developed by a surge block and sand bailer method, and pumped with a submersible pump until the extracted water was free of visible suspended material. Water samples were collected for chemical analysis for volatile organics (EPA 8240) and petroleum hydrocarbons (EPA 8015). The well development and water sampling methods used are discussed in Appendix A.

An additional observation well, WCC-5 will be located and installed within two weeks based on the estimated direction of the ground water gradient provided in this report. Well WCC-5 will be located along the eastern property line to

levels in the semi-perched aquifer beneath the facility may be influenced by the same factors as the deeper aquifers in the area.

4.2 Ground Water Gradient

The ground water gradient calculated from ground water elevations taken 6 November 1987 indicates a gradient sloping from the northwest to the southeast. Direction of ground water flow is illustrated on Figure 3. The ground water gradient was calculated through the use of gradient vectors between wells WCC-1, -2, -3, and -4. The ground water gradient illustrated in Figure 3 is based on data from wells WCC-1, -2, -3, and -4, and may not reflect ground water gradients at other areas at the C6 facility.

4.3 Well WCC-5 Location

The southeast gradient of ground water (discussed in Section 4.2) allows observation Well WCC-5 to be located along the property line, downgradient of the tank clusters. The proposed location of WCC-5 is shown on Figure 3. This observation well will be installed, developed, and sampled in the same manner as wells WCC-1, -2, -3, and -4. Water analysis results from Well WCC-5 will be used to assess whether organic compounds are present in the ground water at the site boundary.

4.4 Analytical Results of Wells WCC-1, -2, -3, and -4

Water samples were collected from observation wells WCC-1, WCC-2, -3, and -4 on 15 April and 2 November 1987. The samples were analyzed for volatile organic compounds (EPA 8240) and petroleum hydrocarbons (EPA 8015) by West Coast

Analytical Service, Inc. in Santa Fe Springs, California. Analytical results for the ground water samples are summarized in Table 1.

These analytical results show that the highest concentration of organic compounds was found in the sample collected from Well WCC-3, immediately downgradient of the tank cluster 15T to 18T. The concentration decreases as the downgradient distance from this area increases. The lower readings obtained from WCC-4 as compared to WCC-1 suggest that WCC-4 is closer to the edge of the plume than WCC-1. Well WCC-2, the upgradient well, has very low concentrations of 1,1-DCE, 1,1,1-TCA and TCE. Petroleum hydrocarbons were not detected in the water samples when analyzed by Method 8015. These results indicate that the source of the organic compounds in the ground water was not the release from tanks 19T, 20T.

Soil samples were collected at depths of approximately 45, 55, 65, 75, and 80 feet from all three well locations for Organic Vapor Analyzer (OVA) field headspace measurements and possible laboratory analysis. Refer to Appendix A for sampling methodology. Elevated OVA headspace readings and chemical odors were noted during the installation of Well WCC-3. OVA measurements were recorded on the Boring Logs presented in Appendix B. The presence of odors and elevated OVA readings were not observed at wells WCC-1, WCC-2, and WCC-4. The 55 and 65 foot depth soil samples from Well WCC-3 were analyzed for the presence of volatile organics (EPA 8240) and petroleum hydrocarbons (EPA 8015). Concentrations of 1,1-dichloroethane (methylene chloride), 1,1-dichloroethene (1,1-DCE), 4-methyl-2-pentanone (MIBK), 1,1,1-trichloroethane (1,1,1-TCA), and toluene were found in

TABLE 1

GROUND WATER ANALYTICAL RESULTS

Concentrations (ug/l)

COMPOUNDS	WCC-1 3/27/87	WCC-1* 4/13/87	WCC-1 11/12/87	WCC-2 11/2/87	WCC-2 11/12/87	WCC-3 11/2/87	WCC-3 11/12/87	WCC-4 11/2/87	WCC-4 11/12/87
1,1-Dichloroethene (1,1-DCE)	2,800	3,700/2,500	3,000	5	2	38,000	88,000	360	1,200
1,1-Dichloroethane (1,1-DCA)	--	--/--	23	--	--	--	1,000	--	--
1,1,1-Trichloroethane (1,1,1-TCA)	300	260/120	160	5	--	110,000	54,000	14	35
Trichloroethene (TCE)	4,600	5,500/3,600	5,200	14	4	10,000	11,000	700	690
4-Methyl-2-pentanone (MIBK)	--	--/--	--	--	--	54,000	70,000	--	--
trans-1,2-dichloroethene (trans-1,2-DCE)	--	--/--	75	--	--	--	1,000	2	--
Chloroform	--	--/--	39	--	--	--	--	2	--
Toluene	--	--/--	--	6	1	80,000	140,000	--	--
Benzene	85	110/--	160	--	--	--	--	--	--
Detection level (ug/l)	50	50/50	20	1	1	1,000	1,000	1	10

* Duplicate sample also analyzed
-- Not detected

the soil samples ranging from 8 to 590 ug/kg (ppb). Petroleum hydrocarbons were not found in the soil samples analyzed.

As a part of the underground tank management program at the C6 facility, soil borings were installed next to tanks and sumps, to identify past or current leakage of chemicals from these storage units. Borings were installed on 24 August 1987 adjacent to tanks 15T and 17T. Boring Logs for tanks 15T and 17T are presented in Appendix B. Analytical results obtained from soil samples collected from these borings are summarized in Table 2.

The results indicate the presence of organic compounds in the soil next to the tanks. Soil samples from the boring next to Tank 15T contained a variety of compounds, including some of those found in the ground water (1,1,1-TCA, MIBK, TCE, and toluene). Samples from the boring next to Tank 17T contained only MIBK from the variety of compounds found in the ground water.

Laboratory analytical results for water and soil samples, and copies of the chain-of-custody forms are presented in Appendix C.

4.5 Depth of Penetration of Petroleum Hydrocarbons

Boring B-4 was installed on May 26, 1987, and was terminated at a vertical depth of approximately 54 feet (slant depth of 60.5 feet, see Figure 2). Analysis of samples collected from the boring showed that the concentration of petroleum hydrocarbons decreased from 16,000 mg/kg to below detection between a depth of 50 and 54 feet. Table 3 summarizes the

TABLE 2

ANALYTICAL RESULTS FROM SOIL BORINGS 15TB AND 17TB

Compound	Concentration (mg/kg) 15T (20 feet)	17T (30 feet)
2-Butanone (MEK)	1,800	810
1,1,1-TCA	38	--
TCE	94	--
Toluene	6,300	--
Ethylbenzene	180	--
Total xylenes	1,300	--
4-methyl-2-pentanone (MIBK)	--	840

-- Not detected

TABLE 3

ANALYTICAL RESULTS FROM BORING B-4

Sample Depth (ft)	Petroleum Hydrocarbons (mg/kg) ppm
13	ND
18	15,000
22	44,000
27	8,200
31	28,000
36	6,000
40	1,500
44	--
49	16,000
54	ND
Detection Limit	10

-- Not analyzed

analytical data. Data from this boring indicated that the petroleum hydrocarbons have penetrated to a depth of approximately 50 feet.

5.0 CONCLUSIONS

Observation wells WCC-2, -3, and -4 were installed to depths of approximately 90 to 91 feet at the C6 Torrance facility. Soil borings B1, B2, B3, and B4 were installed to depths of 31 to 54 feet, adjacent to tanks 19T and 20T. Data obtained from these wells and borings indicate the following:

1. The ground water gradient in the area under investigation slopes from the northwest to southeast (see Figure 3).

2. During installation of Well WCC-3, elevated OVA headspace readings and chemical odors were observed at depths from 55 to 90 feet. Low concentrations of organic compounds were detected in two soil samples analyzed from this boring. These low concentrations indicate that the compounds are probably present in the soil at this location as a result of diffusion of the compounds from the source(s) in the soil and/or ground water as opposed to a direct release.

3. Analytical results of water samples from wells WCC-1, -2, -3, and -4 do not indicate the presence of petroleum hydrocarbons. However, volatile organic compounds were found in the water samples. The distribution of concentrations seems to indicate a source of organic compounds originating near the tank cluster 15T through 18T. These tanks and associated piping tested tight during the tank testing program in 1986.

4. Ground water elevations from the shallow semi-perched aquifer ranged from -21.41 to -21.94 feet Mean Sea Level. The negative ground water elevations indicate that the ground water is below sea level.

5. Data obtained from observation wells and Boring B-4 indicate that the piping at tanks 19T and 20T is not the source of the organic compounds in the ground water. The area near tank cluster 15T through 18T appears to be a more likely source. In addition, the petroleum hydrocarbons do not appear to have penetrated greater than 50 feet below the surface, and are confined to the area inside Building 41.

6.0 RECOMMENDATIONS

Ground water elevations indicate a gradient to the southeast. Observation Well WCC-5 will be installed within two weeks downgradient along the eastern property line, as shown in Figure 3. This location would detect organic compounds if present in the ground water at the site perimeter. The location was selected based on the ground water gradient established from observation wells WCC-1, -2, -3, and -4, and assumes that hydrogeologic conditions are not significantly different in the proposed location of Well WCC-5.

Between one and three additional borings should be installed near tank cluster 15T to 18T, to evaluate the vertical and lateral distribution of the organic chemicals found in the soil at this location. The results obtained from these borings will help in evaluating whether these tanks are a source of the solvents found in the ground water. The location of the proposed borings will be selected following a review of facility operations at the tank cluster.

Remediation options for cleanup of the fuel oil under Building 41 are currently being evaluated. Options being evaluated include the No Action option and the use of a Vapor Extraction System (VES).

APPENDIX A

ZONE 2

WCC-2 (–21.41)

WCC-3 (–21.80)

WCC-4 (–21.94)

WCC-1 (–21.81)

WCC-5

26S 13T 12T 14T 11T 15T 16T 18T 17T 20T 19T 21S 22S 9T 10T

34 37 36 40 41

N

0 100 200 FEET

NORMANDIE AVE.

LEGEND

WCC-5 — Proposed Location of WCC-5

Tanks and Sumps

WCC-1 (–21.81) — Phase II Groundwater Monitoring Well and Groundwater Elevation

Direction of Groundwater Flow

November 1987

Woodward-Clyde Consultants

PHASE II GROUNDWATER INVESTIGATION
WELL LOCATIONS
AND GROUNDWATER ELEVATIONS

Project No. 8741863D

DOUGLAS AIRCRAFT CO.

Fig. 3

APPENDIX A

APPENDIX A

FIELD PROCEDURES AND METHODOLOGY

APPENDIX A
FIELD PROCEDURES AND METHODOLOGY

A.1 GENERAL INFORMATION

Drilling was performed by A & R Drilling, Inc. of Carson, California. Drilling began on 26 October 1987 and was completed on 30 October 1987. Monitoring wells were drilled using a CME 75 with 7-inch outside diameter (O.D.) and 10-inch O.D. hollow stem augers.

A.1.1 Monitoring Well Installation

Monitoring wells WCC-2, -3, and -4 were constructed of 4-inch, Schedule 40 PVC and set to a depth of about 90 to 91 feet. The monitoring wells were installed by drilling a 90-foot deep pilot hole with the 7-inch O.D. hollow stem augers used for soil sampling. Upon removal of the 7-inch hollow stem auger from the hole, 10-inch O.D. hollow stem augers were used to ream the pilot hole to a 10-inch diameter. A wooden plug was placed in the lead cutting auger to prevent cuttings and water from entering the inside of the auger. Municipal water was added to the inside of augers as drilling progressed through the water table to offset the hydrostatic pressure of the fine grained flowing sands outside the augers. Two attempts were made to install Well WCC-3 without the use of water, but the bottom 3 to 5 feet of the auger "sanded-in" immediately after knocking out the wooden plug. The "sanding-in" of the augers prevented the wells from being properly constructed. Water had to be used to ensure proper well construction of WCC-2, -3, and

-4. The amounts of city water used at each well was noted on the well log forms and samples of city water were collected for possible laboratory analysis.

A.1.2 Well Construction

The monitoring wells were constructed of 4-inch O.D. Schedule 40 PVC flush-threaded blank pipe, and screened with .010-inch slot. Adhesives were not used. Wells were installed with 70 feet of blank casing and 20 feet of screen. The well screen was filter packed using a 1-1/4 inch diameter tremie pipe, to reduce the possibility of sand bridging inside the augers. A filter pack material of Monterey #0/30 sand was selected, based on a field sieve analysis. Filter pack analysis is discussed in Section A.4. The filter pack was placed from the well bottom to about 5 feet above the top of the well screen from 65 to 90 feet.

A five-foot thick bentonite pellet plug was placed above the filter pack, at depths from about 60 to 65 feet, to prevent movement of fluids through the annular space. In addition, bentonite grout was placed at depths from approximately 8 to 60 feet below ground surface. A concrete plug was placed from approximately 8 feet to the surface, to prevent seepage of surface fluids into the well. The top of the well casings were completed 3 to 6 inches below grade and protected with a steel traffic-rated Christy box.

Appendix B presents the Boring Logs and graphic well construction details.

A.1.3 Drilling Residuals

Drill cuttings from each boring were placed in DOT Class 17H 55-gallon drums, and the contents of the drums were labeled using an identification label and permanent ink marker. The drums were sealed and left adjacent to the boring locations. Douglas Aircraft was advised of the locations and contents of the drums, and the need for proper management of the drill cuttings.

A.2 SOIL SAMPLING

Subsurface soil samples were collected at approximately 45, 55, 65, 75, and 80 feet below ground surface. Soil samples were collected for Organic Vapor Analyzer (OVA) headspace measurements, and for laboratory analyses. Soil samples were collected using a California modified sampler. The California modified sampler holds four brass tubes, and is 18 inches in length. Soil sample depths and OVA headspace measurements are shown on the Boring Logs in Appendix B.

A.2.1 OVA Headspace Measurements

Field OVA headspace measurements were taken from one of the soil samples collected at each sampling depth. This procedure was conducted by extruding the contents of one brass tube into a one pint glass jar. The jar's lid has a 1/4-inch diameter hole, which was sealed with duct tape. Approximately 10 minutes was allowed for organic vapors from the soil to reach equilibrium inside the jar. An OVA probe was then inserted through the hole in the jar, and the vapor concentration was measured (in ppm).

A.2.2 Soil Sample Preparation

One to two tubes from the soil sampler were prepared for laboratory analysis. The ends of the tubes were covered with aluminum foil, plastic end caps, and sealed with electrical tape. Soil samples were labeled with the following information:

- Project number
- Project name
- Boring number
- Sample number
- Soil depth
- Date
- Person collecting sample

The soil samples were then sealed in Ziploc plastic bags and placed on ice in an ice chest. All soil samples were delivered to West Coast Analytical Service, Inc. in Santa Fe Springs for analysis. Chain-of-custody procedures, including the use of sample identification labels and chain-of-custody forms, were used for tracking the collection and shipment of soil samples. Copies of the chain-of-custody forms are presented in Appendix C.

A.3 FIELD OBSERVATIONS

Observations made by Woodward-Clyde Consultants personnel during the drilling and sampling operations were recorded on Boring Logs, as presented in Appendix B. These observations related to visual soil classifications, geologic and

stratigraphic comments, observation well construction details, sampling efforts, OVA measurements, and other pertinent information.

A.4 FILTER PACK ANALYSIS

Selection of the proper filter pack material and well screen slot size is essential in collecting a sediment-free or low sediment content water sample. In monitoring wells WCC-2, -3, and -4 soil samples were collected from 75 or 80 feet below grade for sieve analysis. Filter pack design calculations were made based on the grain size distribution obtained from these soil samples.

Soil analyses were conducted in the field by collecting a soil sample from below the water table with a California modified sampler. The soil sample was heated with a portable propane stove to evaporate all water from the soil. When the sample was dried, it was weighed on a scale to the nearest gram. The soil sample was then poured into the top of eight sieves and shaken for approximately 5 minutes. The sieve sizes used in the analysis are shown in Figure A-1. The cumulative percent of the soil sample retained in each sieve was weighed and plotted on a sand analysis curve. It is the sand analysis curve that graphically characterizes the grain size distribution of the soil. Sand analysis curves for wells WCC-2, -3, and -4 are illustrated in Figures A-1, A-2, and A-3, respectively.

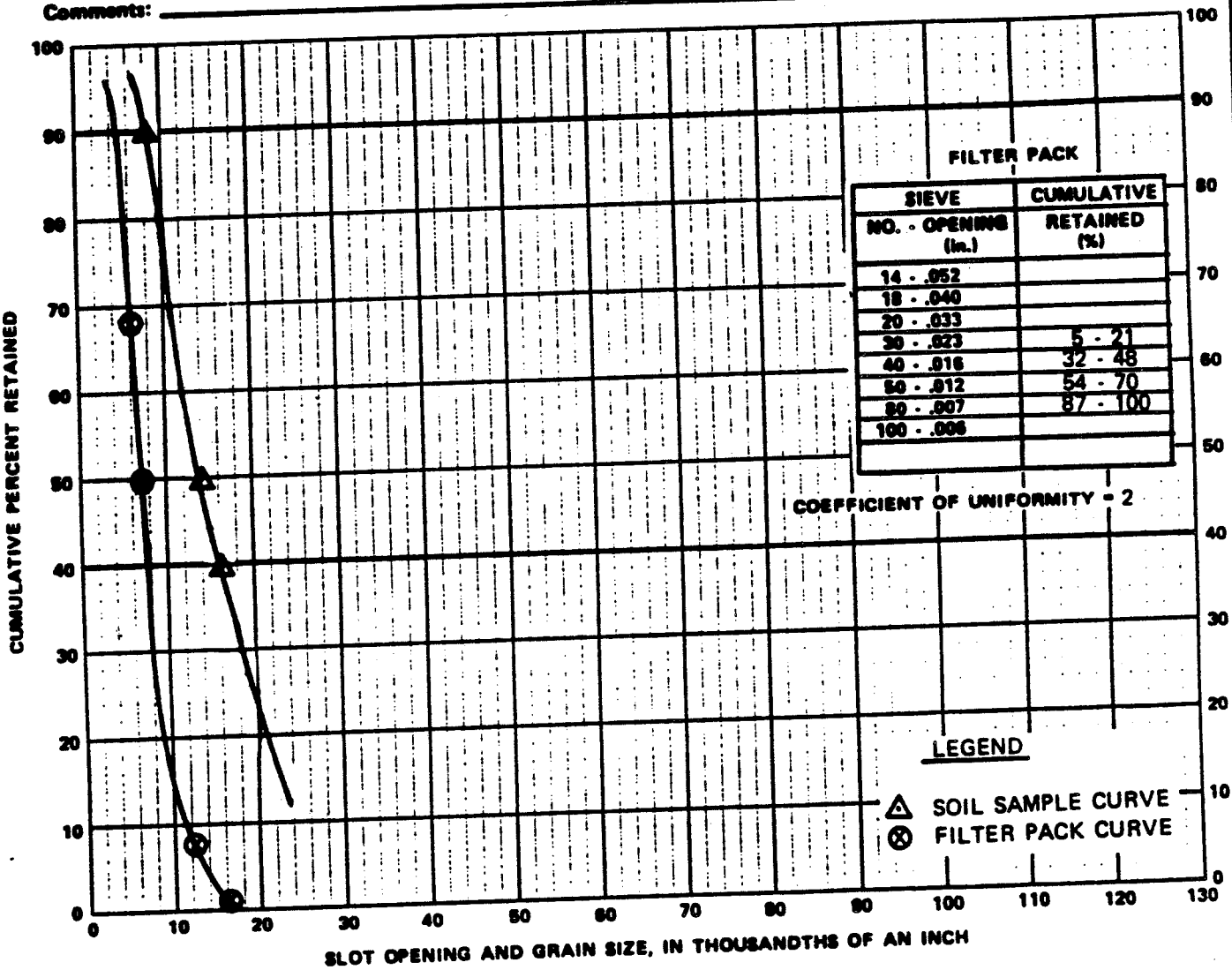
Calculating the filter pack size was done by multiplying the 50 percent retained size of the formation sample by 2 (Johnson 1986). This value was plotted on the sand analysis

Well Name: WCC - 2 Date: 29 October 1987

Well Location: Northwest of Building 1, See Figure 3

Sample Depth: 85 - 86.5 feet Performed By: B. Jacobs

Comments:



FILTER PACK

SIEVE NO. - OPENING (in.)	CUMULATIVE RETAINED (%)
14 - .052	
18 - .040	
20 - .033	
30 - .023	5 - 21
40 - .016	32 - 48
50 - .012	54 - 70
80 - .007	87 - 100
100 - .006	

COEFFICIENT OF UNIFORMITY = 2

LEGEND

△ SOIL SAMPLE CURVE

⊗ FILTER PACK CURVE

SIEVE NO. - OPENING (in.)	SAMPLE WEIGHT (gms)	CUMULATIVE PERCENT RETAINED (%)	CUMULATIVE PERCENT PASSING (%)
14 - .052			
18 - .040			
20 - .033			
30 - .023			
40 - .016	3	1	99
50 - .012	23	8	92
80 - .007	150	50	50
100 - .006	205	68	32
Bottom Pan	300	100	0

Notes: Sample Weight - 300 grams

Uniformity Coefficient = $\frac{.008}{.004}$ = 2

Recommended Slot Opening: .008 inch

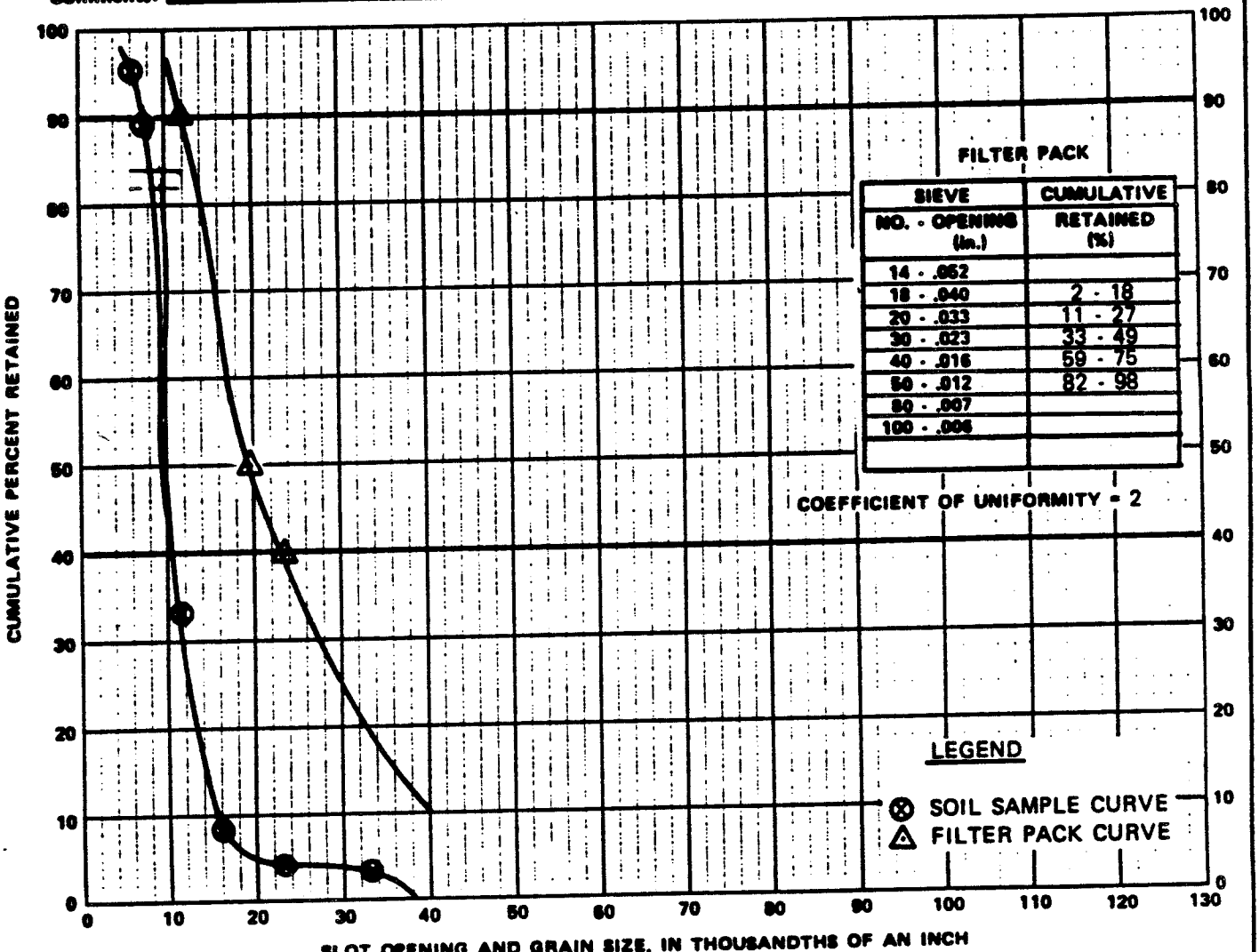
Project DOUGLAS AIRCRAFT Project No. 8741863D	SAND ANALYSIS - WCC-2	Fig. A-1

Well Name: WCC - 3 Date: 26 October 1982

Well Location: Northeast corner of Building 1, See Figure 3

Sample Depth: 75 - 76.5 feet Performed By: B. Jacobs

Comments:



SIEVE NO. - OPENING (in.)	SAMPLE WEIGHT (gms)	CUMULATIVE PERCENT RETAINED (%)	CUMULATIVE PERCENT PASSING (%)
14 - .062			
18 - .040			
20 - .033	8	3	97
30 - .023	13	4	96
40 - .016	25	8	92
50 - .012	100	33	67
80 - .007	268	89	11
100 - .006	284	95	5
Bottom Pan	300	100	0

Notes: Sample Weight - 300 grams

Uniformity Coefficient = $\frac{.011}{.007}$ = 1.57

Recommended Slot Opening: .010 inch

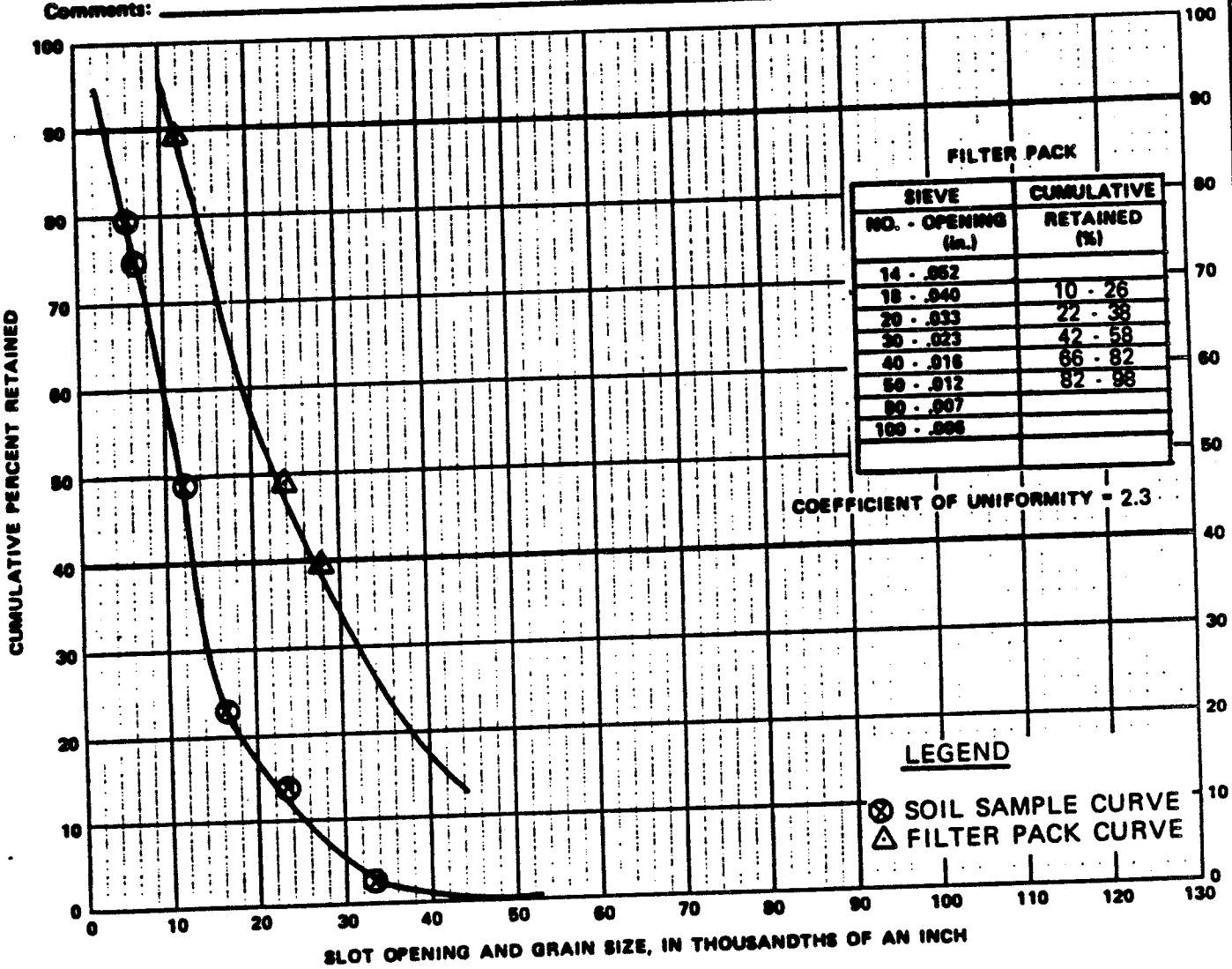
Project DOUGLAS AIRCRAFT Project No. 8741863D	SAND ANALYSIS - WCC-3	Fig. A-2

Well Name: WCC - 4 Date: 29 November 1987

Well Location: Southeast Building 41, See Figure 3

Sample Depth: 80 - 81.5 feet Performed By: B. Jacobs

Comments:



FILTER PACK

SIEVE NO. - OPENING (in.)	CUMULATIVE RETAINED (%)
14 - .062	
18 - .040	10 - 26
20 - .033	22 - 38
30 - .023	42 - 58
40 - .016	66 - 82
50 - .012	82 - 98
80 - .007	
100 - .006	

COEFFICIENT OF UNIFORMITY = 2.3

LEGEND

⊗ SOIL SAMPLE CURVE

△ FILTER PACK CURVE

SIEVE NO. - OPENING (in.)	SAMPLE WEIGHT (gms)	CUMULATIVE PERCENT RETAINED (%)	CUMULATIVE PERCENT PASSING (%)
14 - .062	1.5	.5	99.5
18 - .040	5	1.7	98.3
20 - .033	7	2.5	97.5
30 - .023	39	14	86
40 - .016	64	2.3	77
50 - .012	137	49	51
80 - .007	212	75	25
100 - .006	226	80	20
Bottom Pan	278	99	1

Notes: Sample Weight - 281 grams

Uniformity Coefficient = $\frac{.013}{.004}$ = 3.25

Recommended Slot Opening: .010 inch

Project DOUGLAS AIRCRAFT Project No. 8741803D	SAND ANALYSIS - WCC-4	Fig. A-3

curve. Through this point on the filter pack curve, a smooth curve was drawn representing material with a uniformity coefficient of 2 to 3. The uniformity coefficient was calculated by dividing the 40 percent retained value by the 90 percent value, as shown in the equation below.

$$\text{Uniformity Coefficient (U.C.)} = \frac{U.C.40}{U.C.90}$$

This filter pack curve defined the ideal filter pack required to prevent the entrance of fine silts, sands and clays into the monitoring wells. A ready made filter pack material was then selected that best matched the calculated filter pack curve, since custom made filter pack materials were not readily available. The sand analysis curves for wells WCC-2, -3, and -4 were similar and the soils were classified as fine-grained sands. The filter pack selected for the three monitoring wells was a Monterey #0/30 sand. The sand analysis curve for Monterey #0/30 is shown on Figure A-4.

A.5 WELL DEVELOPMENT AND WATER SAMPLING

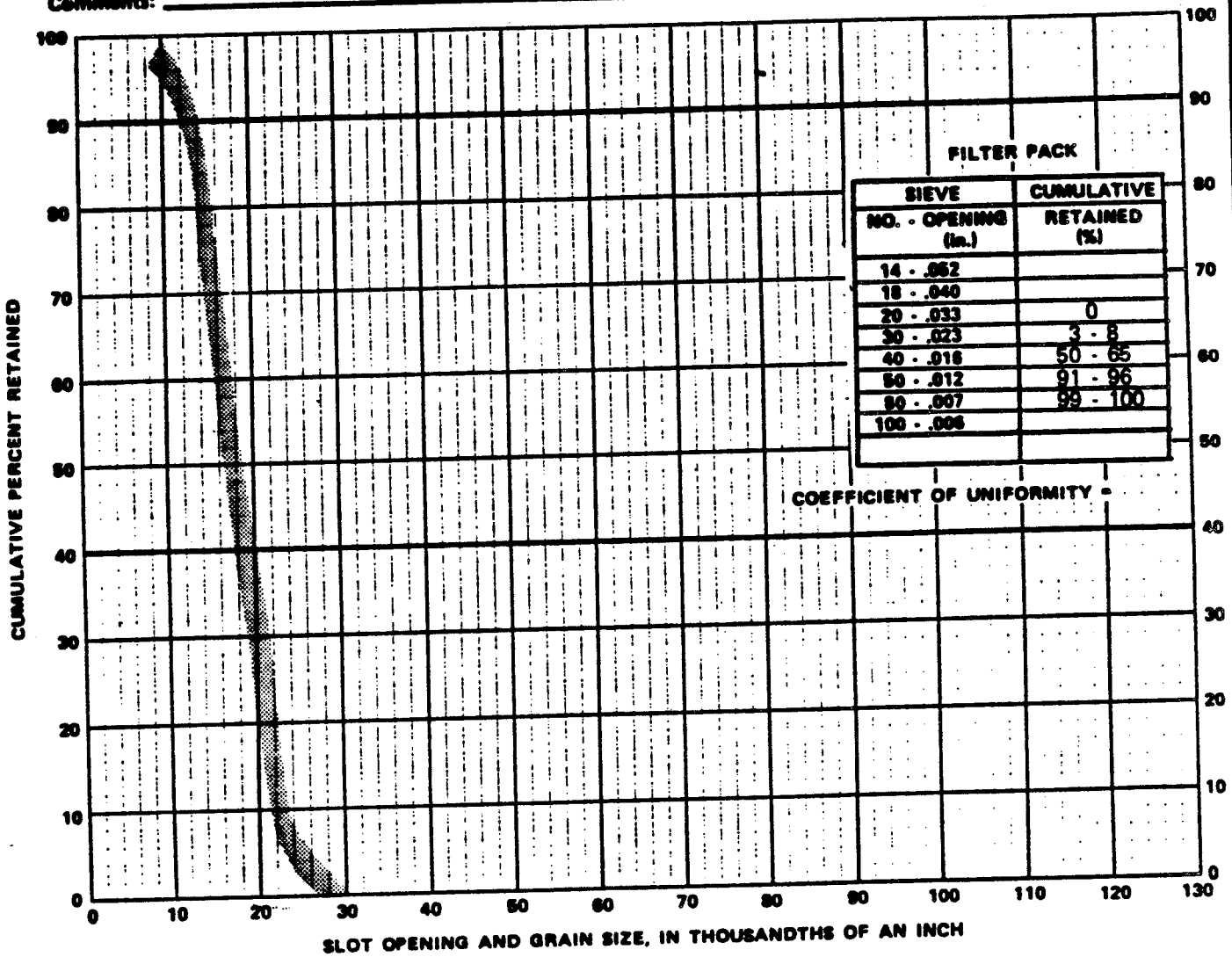
Monitoring wells WCC-2, -3, and -4 were developed on 30 October 1987 by Beylick Drilling Company of La Habra, California. The wells were developed by a sand bailer and surge block method for 45 to 60 minutes and then pumped with a submersible pump. Wells WCC-3 and WCC-4 had 165 gallons of water removed during development. Well WCC-2 had 225 gallons removed during development. Table A-1 presents the development times and the ground water volumes removed.

Well Name: Monterey # 0/30 Sand Date: 11 November 1987

Well Location: ———

Sample Depth: ——— Performed By: B. Jacobs

Comments: Filter Pack Material used in WCC - 2,3, & 4



FILTER PACK

SIEVE NO. - OPENING (in.)	CUMULATIVE RETAINED (%)
14 - .052	
18 - .040	
20 - .033	0
30 - .023	3 - 8
40 - .016	50 - 65
50 - .012	91 - 96
80 - .007	99 - 100
100 - .006	

COEFFICIENT OF UNIFORMITY =

SIEVE NO. - OPENING (in.)	SAMPLE WEIGHT (grms)	CUMULATIVE PERCENT RETAINED (%)	CUMULATIVE PERCENT PASSING (%)
14 - .052			
18 - .040			
20 - .033			
30 - .023			
40 - .016			
50 - .012			
80 - .007			
100 - .006			
Bottom Pan			

Notes: Uniformity Coefficient = $\frac{.020}{.013}$ = 1.54

Recommended Slot Opening: ———

Project DOUGLAS AIRCRAFT Project No. 8741863D	SAND ANALYSIS - MONTEREY # 0/30 SAND	Fig. A-4

TABLE A-1

WELL DEVELOPMENT SUMMARY

Well No.	Sand Bailer and Surge Block Time (min)	Sand Bailer Volume Removed (gal)	Pumping Time (min)	Pumping Volume Removed (gal)	Total Volume Removed (gal)	Comments
WCC-2	60	80	35	145	225	Water clear after pumping 90 gallons
WCC-3	45	15	40	150	165	Water clear after pumping 95 gallons
WCC-4	45	40	35	125	165	Water clear after pumping 75 gallons

The last 50 to 55 gallons removed from the three monitoring wells was observed to be sediment free.

Water removed from the wells during development was contained and sealed in DOT Class 17E 55-gallon drums adjacent to the wells. The drums were labeled for contents, date, and well number.

Observation wells WCC-2, 3, and 4 were sampled on 2 November 1987. Each observation well had a minimum of three well casing volumes removed before a ground water sample was collected. Electrical Conductivity (EC) and temperature was recorded from each five gallons of ground water removed from the well. Stabilized EC and temperature values indicated that ground water from the aquifer formation was being extracted from the well. Table A-2 presents EC, temperature, and ground water volume data recorded during water sampling. The water removed from the wells is being stored on-site prior to disposal.

Monitoring wells were bailed with a PVC 3-1/2 inch PVC bailer. This bailer was washed with Liquinox detergent and rinsed with deionized water between usage in each well. The 3-1/2 inch diameter PVC bailer was only used for well volume removal and was not used for water sampling. After a minimum of three well volumes had been removed, and EC and temperature stabilized, a water sample was collected using a clean, 2-inch diameter Teflon bailer. Each well was sampled with a different 2-inch bailer to minimize the potential for cross-contamination.

TABLE A-2

WATER SAMPLING ELECTRICAL CONDUCTIVITY AND TEMPERATURE DATA

Well No.	Sample Interval (gal)	Electrical Conductivity EC - umhos	Temperature C°
WCC-2	0-5	750	22.5
	5-10	1,000	22.5
	10-15	1,000	22.5
	15-20	1,000	22.5
	20-25	1,000	22.5
	25-30	1,000	22.5
	30-35	1,000	22.5
WCC-3	0-5	2,250	23.0
	5-10	2,100	23.0
	10-15	1,950	22.5
	15-20	2,000	22.5
	20-25	2,000	22.5
	25-30	1,900	22.5
	30-35	1,800	22.5
WCC-4	0-5	1,000	25.0
	5-10	1,050	22.5
	10-15	1,050	22.5
	15-20	1,050	22.5
	20-25	1,050	22.5
	25-30	1,050	22.5
	30-35	1,050	22.5

NOTE: Water samples collected 2 November 1987

APPENDIX B

APPENDIX B

BORINGS LOGS

(ABC/DAPPA)

BORING LOCATION				ELEVATION AND DATUM	
DRILLING AGENCY		DRILLER		DATE STARTED	DATE FINISHED
DRILLING EQUIPMENT				COMPLETION DEPTH (ft)	ROCK DEPTH (ft)
TYPE OF WELL CASING		SCREEN PERFORATION		DIAMETER OF BORING (in.)	DIAMETER OF WELL (in.)
No OF SAMPLES	DIST.	UNDIST.	CORE	LOGGED BY	CHECKED BY
WATER DEPTH (ft)	FIRST	COMPL.	24 HRS.		

DEPTH (feet) | DESCRIPTION | WELL LOG | SAMPLE INFORMATION: No. | Type | Blow Count | O.V.A. (ppm) | Drilling Rate (Time) | REMARKS

Medium dense, moist, light brown, SILTY fine grained SAND (SM).

Unified Soil Classification System (USCS).

Sample Identification Number.

Sample Location and Type.

5

Concrete

Bentonite Pellets

10

Native Soil

Monterey No. 0/30 Sand Filter Pack

15

Screen

Modified California Sampler.

20

Bentonite (Volclay) Grout

25

Number of Blows Required to Advance Sampler One Foot using a 140 Pound Downhole Hammer with a 30-inch Drop.

Organic Vapor Analyzer (OVA) Readings (field headspace).

30

Rate at which Drilling Progresses. Time at depths noted.

Remarks or Comments by Driller or Drilling Supervisor.

35

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Project No.: 8741863D

KEY TO BORING LOG

Fig. B-0

WOODWARD-CLYDE CONSULTANTS

BORING LOCATION	WCC-1	ELEVATION AND DATUM	Top of Casing 50.70 Feet
DRILLING AGENCY	Datum Exploration, Inc. / DRILLER James	DATE STARTED 3-25-87	DATE FINISHED 3-26-87
DRILLING EQUIPMENT	Mobile Drill B-61, 10-inch O.D., H.S.A.	COMPLETION DEPTH (FT) 91	ROCK DEPTH (FT) –
DIAMETER AND TYPE OF WELL CASING	2-inch Plastic, Flush Threaded	NO. OF SAMPLES: DIST. 5	UNDIST – / CORE –
TYPE OF PERFORATION	.02 Slot	WATER DEPTH (FT): FIRST 74.5	COMPL – / 24 HRS –
TYPE OF BACKFILL	No. 12 Silica Sand	LOGGED BY S. Donaldson	CHECKED BY B. Jacobs
TYPE OF SEAL	Bentonite Pellet Plug and Bentonite Grout		

DEPTH (FEET)	DESCRIPTION	Lithology	Observation Well	SAMPLES No.	SAMPLES Type	SAMPLES Blow Count	SAMPLES Drilling Rate/Time	REMARKS
0	Asphalt						0905	Background OVA reading = 1-2 ppm
	Damp, reddish-brown, SILTY SAND (SP) with clay and gravel.							
	Becomes black							
5	Becomes reddish brown, no gravel.							
10	Becomes medium brown.							
	CLAYEY SAND (SC).						0915	
15								
20								
25	Stiff, damp, medium brown, CLAYEY SILT (ML) with some fine sand.							
30	Becomes hard with more clay.						0920	
35								
	Lense of volcanic (?) angular gravel.							

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LOG OF BORING WCC-1

Fig. B-1

LA/OR-0783-235R

WOODWARD-CLYDE CONSULTANTS

BOE-C6-0220918

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Observation Well	GRAPHIC LOG: OVA (ppm)	SAMPLES: No.	SAMPLES: Type	SAMPLES: Blow Count	SAMPLES: Drilling Rate/Time	REMARKS
	Lense of volcanic (?) angular gravel (continued).								
40								0930	
	Becomes moist and hard.								
45					1	X	59		
	Very hard, moist, dark brown, SILTY CLAY (CL).								
50	Lenses of very hard, carbonate cemented concretions.			1	2	X	26		
55								1010	
60	Increasing silt.								
	Medium dense, dry, tan, fine SAND (SP).			7.5	3	X	57		
65	Dense, dry, whitish-tan, fine SAND (SP).								
70	Becomes damp and very dense.			2.5	4	X	50/5"		
	Very stiff, damp, dark brown SILT (ML).								
75	Becomes wet.			7.8	5	X	50/5"		Water encountered at 74.5 feet.
	Very dense, wet, brown, fine SAND (SP).								

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Project No.: 41863B

CONT. LOG OF BORING WCC-1

Fig. B-2

LA/OR-0783-236R

WOODWARD – CLYDE CONSULTANTS

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Observation Well	GRAPHIC LOG: OVA (ppm)	SAMPLES: No.	SAMPLES: Type	SAMPLES: Blow Count	SAMPLES: Drilling Rate/Time	REMARKS
	Very stiff, wet, dark brown SILT (ML) (continued).								
	Very dense, wet, brown, fine SAND (SP).				12		6		
80									
85									
90	Stiff, moist, dark brown, SILTY CLAY (CL).								
	Bottom of Boring at 91 feet.								
95									
100									
105									
110									
115									

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Project No.: 41863B

CONT. LOG OF BORING WCC-1

Fig. B-3

LA/OR-0783-236R

WOODWARD – CLYDE CONSULTANTS

BORING LOCATION	WCC-2 See Figure 2		ELEVATION AND DATUM	Top of casing @ 50.59 ft.	
DRILLING AGENCY	A & R Drilling, Inc.	DRILLER M. Smith	DATE STARTED	10-28-87	DATE FINISHED 10-28-87
DRILLING EQUIPMENT	CME 75, 10-inch H.S.A.		COMPLETION DEPTH (ft)	90.6	ROCK DEPTH (ft) –
TYPE OF WELL CASING	4" Sch. 40 PVC	SCREEN PERFORATION .010 Slot	DIAMETER OF BORING (in.)	10	DIAMETER OF WELL (in.) 4
No OF SAMPLES	DIST. –	UNDIST. 5	CORE –	LOGGED BY H. Reyes	CHECKED BY B. Jacobs
WATER DEPTH (ft)	FIRST 73	COMPL –	24 HRS. 71.1		

DEPTH (feet)	DESCRIPTION	WELL LOG	SAMPLE INFORMATION No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (Time)	REMARKS
	Asphalt Medium stiff, very moist, dark yellowish brown, SANDY CLAY (CL).						1306	Background OVA reading = 5 ppm
5	Becomes very dark grayish brown.						1308	
10	Color change to yellowish brown. Becomes stiffer less moisture, SANDY CLAY (CL).							
15							1317	
	Continued SANDY CLAY (CL). Less stiff, more moist.							
20							1319	
	Grades to SILTY CLAY (CL). Medium stiff, very moist, olive brown, SILTY CLAY.							
25							1323	
30							1327	
35							1333	

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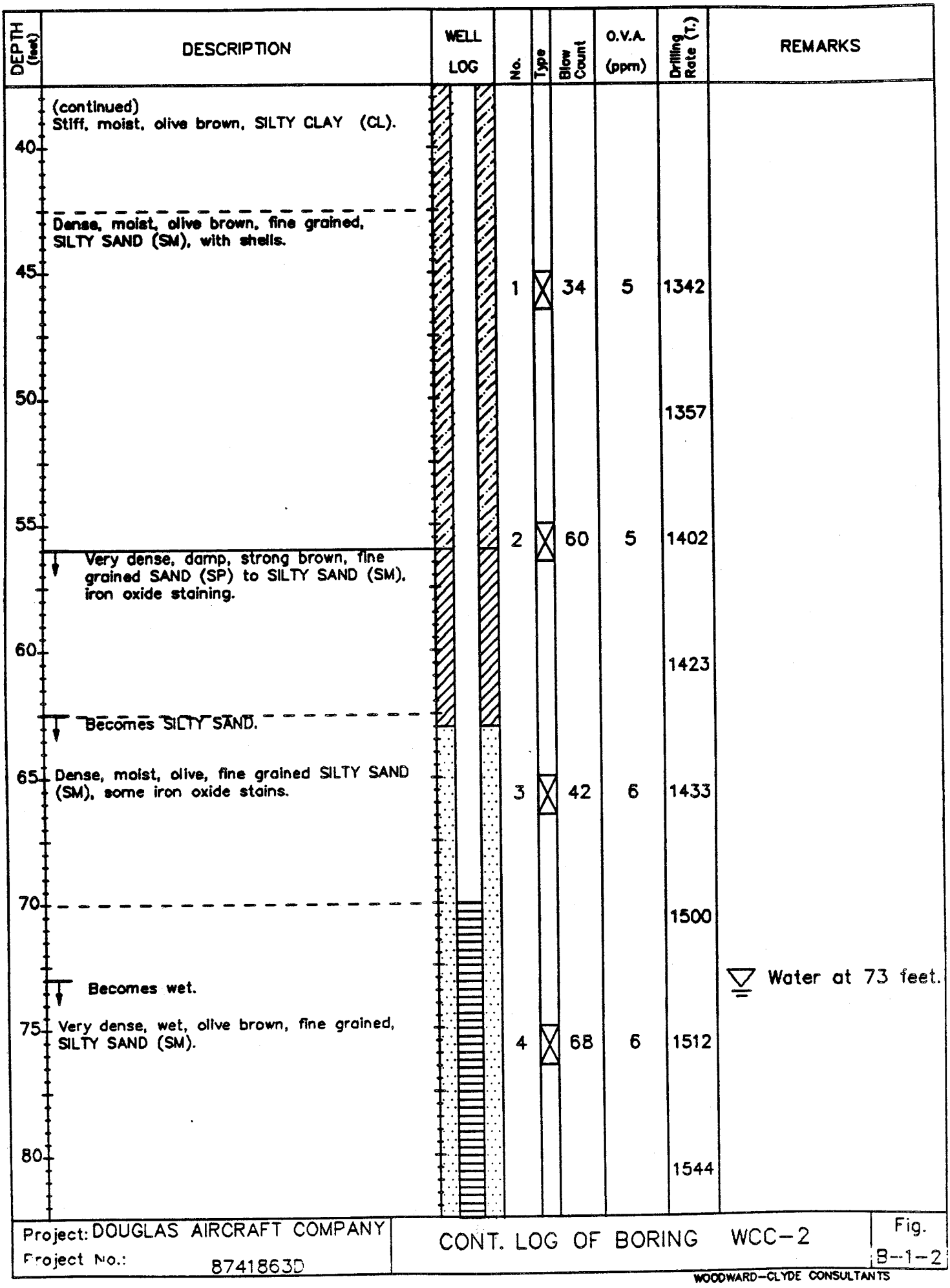
LOG OF BORING WCC-2

Fig. B-1-1

WOODWARD-CLYDE CONSULTANTS


DEPTH (feet)
DESCRIPTION
WELL LOG
No.
Type
Blow Count
O.V.A. (ppm)
Drilling Rate (T.)
REMARKS
(continued)
Stiff, moist, olive brown, SILTY CLAY (CL).
40
Dense, moist, olive brown, fine grained, SILTY SAND (SM), with shells.
45
1
34
5
1342
50
1357
55
2
60
5
1402
Very dense, damp, strong brown, fine grained SAND (SP) to SILTY SAND (SM), iron oxide staining.
60
1423
Becomes SILTY SAND.
65
Dense, moist, olive, fine grained SILTY SAND (SM), some iron oxide stains.
3
42
6
1433
70
1500
Water at 73 feet.
Becomes wet.
75
Very dense, wet, olive brown, fine grained, SILTY SAND (SM).
4
68
6
1512
80
1544
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CONT. LOG OF BORING WCC-2
Fig. B-1-2
WOODWARD-CLYDE CONSULTANTS

DEPTH (feet)	DESCRIPTION	WELL LOG	No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85	(continued) Very dense, wet, olive, fine grained to very fine grained SILTY SAND (SM), micaceous, with some clay interbedding and iron oxide staining.		5		50/3"	5	1600	
90	Bottom of Boring at 90.5 feet.							Note: 48 gallons of city water used to offset hydrostatic head of flowing sands during well installation.
95								
100								
105								
110								
115								
120								
125								

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CONT. LOG OF BORING WCC-2

Fig. B-1-3

WOODWARD-CLYDE CONSULTANTS

BORING LOCATION	WCC-3 See Figure 2			ELEVATION AND DATUM	Top of Casing @ 51.19 ft.
DRILLING AGENCY	A & R Drilling, Inc.	DRILLER	M. Smith	DATE STARTED	10-26-87
				DATE FINISHED	10-26-87
DRILLING EQUIPEMENT	CME 75, 10-inch H.S.A.			COMPLETION DEPTH (ft)	92
				ROCK DEPTH (ft)	-
TYPE OF WELL CASING	4" Sch. 40 PVC	SCREEN PERFORATION	.010 Slot	DIAMETER OF BORING (in.)	10
				DIAMETER OF WELL (in.)	4
No OF SAMPLES	DIST. -	UNDIST. 6	CORE -	LOGGED BY	H. Reyes
				CHECKED BY	B. Jacobs
WATER DEPTH (ft)	FIRST 73.5	COMPL. -	24 HRS. 74.0		

DEPTH (feet)	DESCRIPTION	WELL LOG	SAMPLE INFORMATION No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (Time)	REMARKS
	Asphalt						0846	Background OVA reading = 4-6 ppm
	Damp, very dark grayish brown, fine grained SILTY SAND (SM) with small gravel.							
	Soft, very moist, dark gray to black SILTY CLAY (CL).							
5	Becomes less moist, dark yellowish brown, stiff.							
10	Continued SILTY CLAY (CL). Becomes more stiff, no detectable odor.							
15							0855	
	Dense, moist, yellowish brown, CLAYEY SAND to SANDY CLAY (SC-CL).							
20							0857	No odor.
	Grades to SILTY CLAY (CL). Stiff, moist, dark yellowish brown SILTY CLAY.							
25							0905	
								No odor.
30								
	Lens of volcanic ash.							
35							0913	

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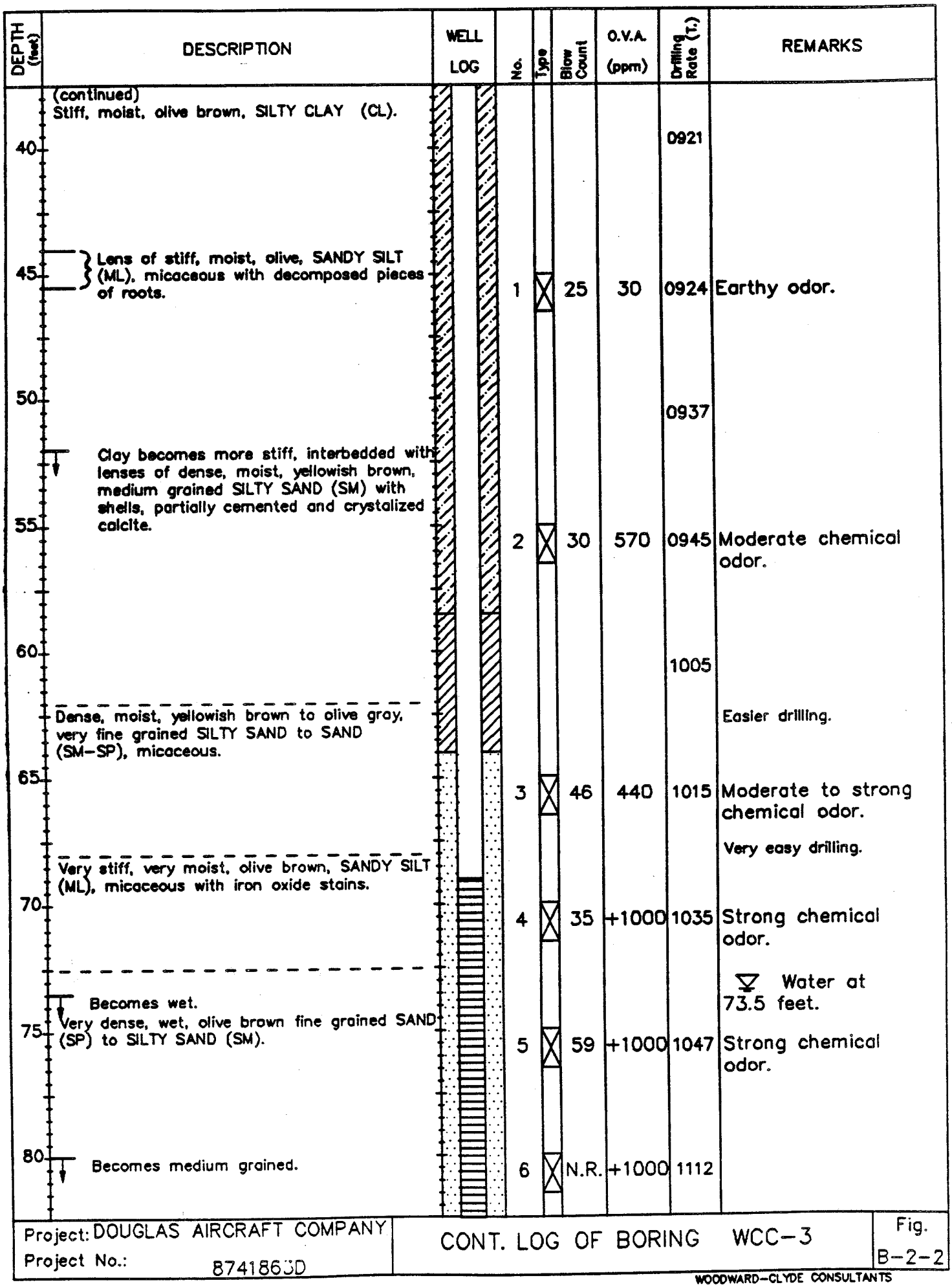
LOG OF BORING WCC-3

Fig. 3-2-1

WOODWARD-CLYDE CONSULTANTS



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CONT. LOG OF BORING WCC-3

Fig. B-2-2

WOODWARD-CLYDE CONSULTANTS

DEPTH (feet)	DESCRIPTION	WELL LOG	No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85	(continued) Very dense, saturated, olive brown, fine to medium grained SAND (SP–SM) with some silt.						1205	Moderate to strong chemical odor.
90							1545	
95	Bottom of Boring at 92.0 feet.							Note: Used 59 gallons of city water to offset hydrostatic head of flowing sands during well installation.
100								
105								
110								
115								
120								
125								

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CONT. LOG OF BORING WCC–3

Fig. B–2–3

WOODWARD–CLYDE CONSULTANTS

BORING LOCATION	WCC-4 See Figure 2		ELEVATION AND DATUM	Top of casing @ 49.69 ft.	
DRILLING AGENCY	A & R Drilling, Inc.	DRILLER M. Smith	DATE STARTED	10-27-87	DATE FINISHED 10-27-87
DRILLING EQUIPEMENT	CME 75, 10-inch H.S.A.		COMPLETION DEPTH (ft)	91.5	ROCK DEPTH (ft) –
TYPE OF WELL CASING	4" Sch. 40 PVC	SCREEN PERFORATION .010 Slot	DIAMETER OF BORING (in.)	10	DIAMETER OF WELL (in.) 4
No OF SAMPLES	DIST. –	UNDIST. 8 CORE –	LOGGED BY	H. Reyes	CHECKED BY B. Jacobs
WATER DEPTH (ft)	FIRST 75	COMPL. – 24 HRS. 71.6			

DEPTH (feet)	DESCRIPTION	WELL LOG	SAMPLE INFORMATION No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (Time)	REMARKS
	Asphalt						1230	Background OVA reading = 4-6 ppm
	Moist, grayish brown, SILTY CLAY with some SAND (CL).							
5	Moist, dark yellowish brown, SILTY CLAY (CL).							No odor.
10								
15								
20								
25								
30								
35	Lense of dark greenish black volcanic(?) angular gravel.							

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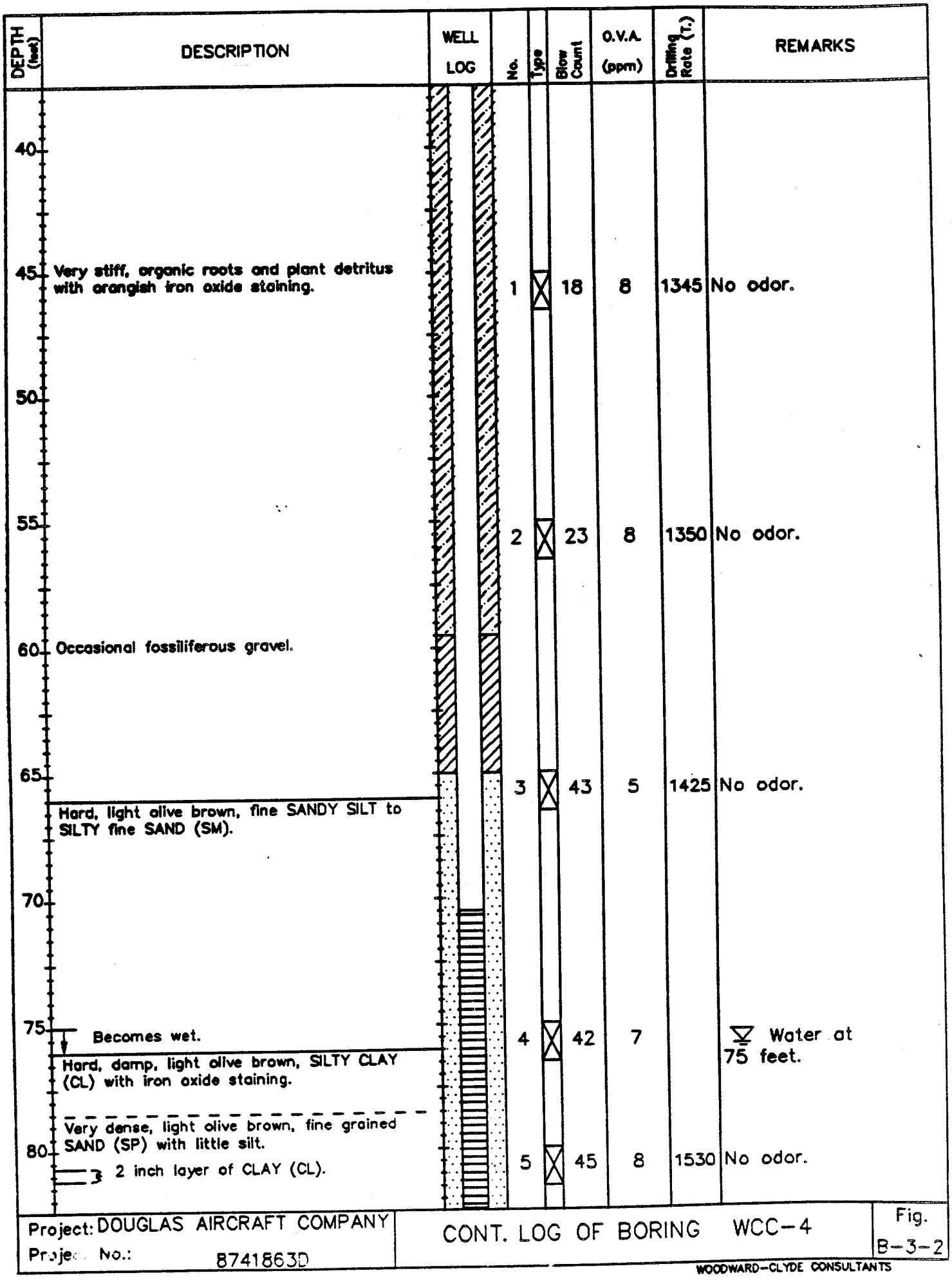
LOG OF BORING WCC-4

Fig. B-3-1

WOODWARD-CLYDE CONSULTANTS



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CONT. LOG OF BORING WCC-4

Fig. B-3-2

WOODWARD-CLYDE CONSULTANTS

DEPTH (feet)	DESCRIPTION	WELL LOG	No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85	(continued) Very dense, wet, light olive brown, fine grained SAND (SP) with little silt.							
90	Moist, light olive brown, SILTY CLAY (ML–CL).		6		N.R.	8	1700	No odor.
	Bottom of Boring at 91.5 feet.							Note: 45 gallons of city water used to offset hydrostatic head of flowing sands during well installation.
95								
100								
105								
110								
115								
120								
125								

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CONT. LOG OF BORING WCC–4

Fig. B–3–3

WOODWARD–CLYDE CONSULTANTS

BORING LOCATION	See Location Map	ELEVATION AND DATUM	Not Available
DRILLING AGENCY	A & R Drilling, Inc. / DRILLER M. Romero	DATE STARTED	8-24-87 / DATE FINISHED 8-24-87
DRILLING EQUIPEMENT	CME 45, 8-inch O.D.,H.S.A.	COMPLETION DEPTH (ft)	41 / ROCK DEPTH (ft) –
TYPE OF WELL CASING	N/A / SCREEN PERFORATION N/A	DIAMETER OF BORING (in.)	8 / DIAMETER OF WELL (in.) –
No OF SAMPLES	DIST. – / UNDIST. 9 / CORE –	LOGGED BY	P. Glaesman
WATER DEPTH (ft)	FIRST – / COMPL. – / 24 HRS. –	CHECKED BY	M. Razmdjoo

DEPTH (feet)	DESCRIPTION	WELL LOG	SAMPLE INFORMATION No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (Time)	REMARKS
	Asphalt covering. Medium dense, damp, yellowish brown, SILTY fine to medium grained SAND (SM), micaceous, 4-inch CLAYEY layer near surface. (FILL)		1	X	9	10	1230	Definite odor.
5	Loose, damp, yellowish brown, fine to medium grained SAND (SP-SM), with some SILT, micaceous, (FILL).		2	X	2	52	1240	Strong odor.
10	Color changing to gray with some yellowish brown mixed in. Less silt, micaceous (SP).(FILL)		3	X	2	600	1250	Strong odor.
	Stiff, moist, olive brown, CLAYEY SILT (ML), micaceous.							
15			4	X	11	>1000	1300	Strong odor.
	Stiff, moist, olive brown, SANDY SILT (ML), micaceous.							
20			5	X	9	>1000	1310	Strong odor.
	Stiff to very stiff, moist, olive brown, CLAYEY SILT (ML).							
25			6	X	14	>1000	1320	Strong odor.
30			7	X	20	>1000	1335	Strong odor.
35	With some fine grained SAND (ML).		8	X	10	>1000	1345	Strong odor.

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LOG OF BORING 15TB

Fig. B-4-1

WOODWARD-CLYDE CONSULTANTS

DEPTH (feet)	DESCRIPTION	WELL LOG	No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40	Stiff, moist, olive brown, CLAYEY SILT (ML), micaceous.		9	X	17	>1000	1400	Strong odor.
	Bottom of Boring at 41 feet.							
45								
50								
55								
60								
65								
70								
75								
80								

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Project No.: 8741863C

CONT. LOG OF BORING 15TB

Fig. B-4-2

WOODWARD-CLYDE CONSULTANTS

BORING LOCATION	See Location Map			ELEVATION AND DATUM	Not Available
DRILLING AGENCY	A & R Drilling, Inc.	DRILLER	M. Romero	DATE STARTED 8-24-87	DATE FINISHED 8-24-87
DRILLING EQUIPEMENT	CME 45, 8-inch O.D.,H.S.A.			COMPLETION DEPTH (ft) 41	ROCK DEPTH (ft) –
TYPE OF WELL CASING	N/A	SCREEN PERFORATION	N/A	DIAMETER OF BORING (in.) 8	DIAMETER OF WELL (In.) N/A
No OF SAMPLES	DIST. –	UNDIST. 9	CORE –	LOGGED BY P. Glaesman	CHECKED BY M. Razmdjoo
WATER DEPTH (ft)	FIRST –	COMPL. –	24 HRS. –		

DEPTH (feet)	DESCRIPTION	WELL LOG	SAMPLE INFORMATION No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (Time)	REMARKS
	Asphalt covering. Medium dense, moist, yellowish brown, SILTY fine to medium grained SAND (SM), micaceous. (FILL)		1	X	11	75	1500	Little odor.
5			2	X	2	200	1510	Sample was between the tank backfill and natural material. One edge of sample included natural material, SANDY SILT (ML)
	Stiff to very stiff, moist, yellowish brown, SANDY SILT (ML), micaceous.					30	1515	
10			3	X	16			No odor.
15			4	X	12	45	1530	Slight odor.
20			5	X	17	60	1540	Slight odor.
25			6	X	17	950	1545	Definite odor.
30	Olive brown, CLAYEY SILT layer (ML).		7	X	18	>1000	1600	Strong odor.
35			8	X	16	>1000	1610	

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LOG OF BORING 17TB

Fig. B-5-1

WOODWARD-CLYDE CONSULTANTS

DEPTH (feet)	DESCRIPTION	WELL LOG	No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40	Very stiff, moist, olive brown, CLAYEY SILT (ML), little mica.		9	X	26	>1000	1620	
	Bottom of Boring at 41 feet.							Note: Vertical boring.
45								
50								
55								
60								
65								
70								
75								
80								

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Project No.: 8741863C

CONT. LOG OF BORING 17TB

Fig. B-5-2

WOODWARD-CLYDE CONSULTANTS

BORING LOCATION: B-1 Tanks T-19 and T-20		ELEVATION AND DATUM:	
DRILLING AGENCY: Datum Exploration	DRILLER: Keith	DATE STARTED: 4 April 1986	DATE FINISHED: 4 April 1986
DRILLING EQUIPMENT: Mobile B-53, 9.5 Hollow Stem Auger		COMPLETION DEPTH (FT): 50	ROCK DEPTH (FT): —
DIAMETER AND TYPE OF WELL CASING: None Installed		NO. OF SAMPLES: DIST. —	UNDIST. 10 / CORE
TYPE OF PERFORATION: Not Applicable		WATER DEPTH (FT): FIRST —	COMPL. / 24 HRS. —
TYPE OF PERFORATION BACKFILL: No. 60 Sand (85%) / Bentonite Flour (15%)		LOGGED BY: M. Leach	CHECKED BY: B. Jacobs
TYPE OF SEAL: Asphaltum			

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	OVA (ppm): Sample	OVA (ppm): Backgn'd	SAMPLES: No.	SAMPLES: Type	SAMPLES: Blow Count	SAMPLES: Drilling Rate/Time	REMARKS
	Asphalt								
	Rust colored, SILTY SAND (SM)								
	Medium stiff, moist, dark brown, SANDY CLAY		0.0		1	X	6 4 3		
5	Becomes very moist								
			30		2	X	15 22 35		
10	Becoming light reddish brown and hard								
			34		3	X	6 12 16		
15	Becoming light brown and very stiff								
	Medium dense, moist, light brown, CLAYEY, fine-grained SAND (SC)		100		4	X	11 8 13		
20	Becoming lighter brown and drier								
			50		5	X	8 16 18		
25	Very stiff, moist, light brown, SANDY CLAY (CL)								
			45		6	X	8 15 30		
30	Very stiff, moist, light brown, CLAY (CL)								
			4		7	X	9 27 50 (4")		
35	Very dense, light grayish-brown, fine-grained SAND (SP)								

Project: DOUGLAS TORRANCE
Project No.: 41863A

LOG OF BORING B-1

Fig. B-6-1

LA/OR-0783-235R

WOODWARD—CLYDE CONSULTANTS

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	OVA (ppm): Sample	OVA (ppm): Backgn'd	SAMPLES: No.	SAMPLES: Type	SAMPLES: Blow Count	SAMPLES: Drilling Rate/Time	REMARKS
40				7	8		14 24 36		
	Moist, light brown, CLAY (CL) with some fine-grained SAND								
	Dense, brownish-gray, SILTY, fine-grained SAND (SM)			5	9		12 17 30		
45	Hard, moist, brown CLAY (CL)								
	Very dense, gray, fine-grained SAND (SP)			18	10		13 22 34		
50	Bottom of Boring at 50 feet								
55									
60									
65									
70									
75									
80									

Project: DOUGLAS TORRANCE
Project No.: 41863A

CONT. LOG OF BORING B-1

Fig. B-6-2

LA/OR-0783-236R

WOODWARD – CLYDE CONSULTANTS

BORING LOCATION	Boiler Room At T-19, 20 (C-6 Facility)	ELEVATION AND DATUM	Approximately 52 Feet MSL
DRILLING AGENCY	Datum Exploration, Inc. / DRILLER Kit Stephens	DATE STARTED 12/29/86	DATE FINISHED 1/5/87
DRILLING EQUIPMENT	Simco 2400SK, Datum D27-L (Dietrich Gasoline Engine)	COMPLETION DEPTH (FT) 51′	ROCK DEPTH (FT) –
DIAMETER AND TYPE OF WELL CASING	6" Hollow Stem Auger; No Casing in Installed	NO. OF SAMPLES: DIST. –	UNDIST. 20 / CORE –
TYPE OF PERFORATION	N/A	WATER DEPTH (FT): FIRST –	COMPL. – / 24 HRS. –
TYPE OF PERFORATION	N/A	LOGGED BY: Jacobs/ Donaldson/ Gibson	CHECKED BY: Sd
TYPE OF SEAL	Concrete, #60 Silca Sand (85%) and Bentonite (15%)		

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Observation Well	SAMPLES: OVA (ppm)	SAMPLES: No.	SAMPLES: Type	SAMPLES: Blow Count	SAMPLES: Drilling Rate/ Time	REMARKS
	Concrete and pea gravel.								Hydrocarbon odor
	Stff, damp, olive to brown SILTY CLAY (CL-CH).			250	1		NR		
5				300	2		NR		Hydrocarbon odor and staining throughout boring.
10				140	3		NR		
15	Becomes olive to dark olive green.			440	4		NR		
20				>1000	5		NR		
25				560	6		NR		
30	Gravel lense (to 2"Ø).			460	7		NR		Drilling difficult- Stop drilling. Commence drilling at 31′ on 1/5/87 with datum D27-L rig.
	Becomes hard and grey, sandy, and thinly laminated.								
35	Becomes silty.			>1000	7		75		

Project: DOUGLAS TORRANCE
Project No.: 41863B

LOG OF BORING B-2

Fig. B-7-1

LA/OR-0783-235R

WOODWARD-CLYDE CONSULTANTS

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Observation Well	OVA (ppm)	SAMPLES: No.	SAMPLES: Type	SAMPLES: Blow Count	SAMPLES: Drilling Rate/Time	REMARKS
40				560	8	X	66		
45				400	9	X	53		
50				>1000	10	X	90		
	Bottom of Boring at 51 Feet.								
55									
60									
65									
70									
75									
80									

Project: DOUGLAS AIRCRAFT
Project No.: 41863B

CONT. LOG OF BORING B-2

Fig. B-7-2

LA/OR-0783-236R

WOODWARD – CLYDE CONSULTANTS

BORING LOCATION	Boiler Room at T-19, 20 (C-6 Facility)	ELEVATION AND DATUM	Appoximately 52 Feet MSL
DRILLING AGENCY	Datum Exploration, Inc / DRILLER Kit Stephens	DATE STARTED 1/6/87	DATE FINISHED 1/6/87
DRILLING EQUIPMENT	Datum D27-L (Dietrich Gasoline Engine)	COMPLETION DEPTH (FT) 31'	ROCK DEPTH (FT) –
DIAMETER AND TYPE OF WELL CASING	6" Hollow Stem Auger; No Casing Installed	NO. OF SAMPLES / DIST. –	UNDIST. 12 / CORE –
TYPE OF PERFORATION	N/A	WATER DEPTH (FT) / FIRST None	COMPL. – / 24 HRS. –
TYPE OF PERFORATION BACKFILL	N/A	LOGGED BY: S. Donaldson	CHECKED BY: Sd
TYPE OF SEAL	Concrete, #60 Silca Sand (85%) and Bentonite (15%)		

DEPTH (FEET)	DESCRIPTION	GRAPHIC LOG: Lithology	GRAPHIC LOG: Observation Well	SAMPLES: OVA (ppm)	SAMPLES: No.	SAMPLES: Type	SAMPLES: Blow Count	SAMPLES: Drilling Rate/Time	REMARKS
	Concrete								
	Dense, damp, light grey, fine SAND (SP) with FeO_2 staining and hydrocarbon odor.								
	Stiff, damp, dark brown SILTY CLAY (CL-CH).								
5				310	1	X	48		
10	Gravel lense (< 2"Ø). Becomes hard.			105	2	X	30 50/ 5"		
15	Medium dense, damp, grey CLAYEY SAND (SC) strong hydrocarbon odor.			62	3	X	27		Easier drilling
20	Becomes dense and greyish brown.			350	4	X	47		
25	Becomes very dense, grey, more SANDY (SC-SP).			260	5	X	65		
30				340	6	X	66		
	Bottom of Boring at 31 Feet.								
35									

Project: DOUGLAS AIRCRAFT
Project No.: 41863B

LOG OF BORING B-3

Fig. B-8-1

LA/OR-0783-235R

WOODWARD-CLYDE CONSULTANTS

BOE-C6-0220938

BORING LOCATION: Douglas Aircraft C-6 Facility See Map		ELEVATION AND DATUM: Not Available	
DRILLING AGENCY: A & R Drilling	DRILLER: M. Smith	DATE STARTED: 5-26-87	DATE FINISHED: 5-26-87
DRILLING EQUIPEMENT: CME 75 8-inch O.D.,H.S.A.		COMPLETION DEPTH (ft): 61.5	ROCK DEPTH (ft): -
TYPE OF WELL CASING: -	SCREEN PERFORATION: -	DIAMETER OF BORING (in.): 8	DIAMETER OF WELL (in.): -
No OF SAMPLES: DIST. - UNDIST. 10 CORE -		LOGGED BY: P. Glaesman	CHECKED BY: B. Jacobs
WATER DEPTH (ft): FIRST - COMPL. - 24 HRS. -			

DEPTH (feet)	DESCRIPTION	WELL LOG	SAMPLE INFORMATION No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (Time)	REMARKS
	5" Asphalt Cover.						1330	
	Damp, reddish brown, SILTY fine grained SAND (SP), with some CLAY and GRAVEL. (logged from cuttings only)							
5								
	Damp, yellowish brown, SILTY fine grained SAND (SM-SP).							
10						1		
15			1	X		40	1400	
	Damp, medium gray, CLAYEY SILT (ML), some fine grained SAND, brown oily staining in tube #4.		2	X		500	1420	Strong odor.
20								
25			3	X		550	1450	Strong odor.
30			4	X		550	1515	Strong odor.
	Very damp (product), brownish gray, SANDY SILT to SILTY SAND (SM), free product on tubes.		5	X		+1000	1535	Strong odor.
35								

Project: DOUGLAS AIRCRAFT COMPANY
Project No.: 41863B

LOG OF BORING B-4

Fig. B-9-1

WOODWARD-CLYDE CONSULTANTS

BOE-C6-0220939

DEPTH (feet)	DESCRIPTION	WELL LOG	No.	Type	Blow Count	O.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40	Damp, gray, CLAYEY SILT (ML). on tubes.		6	X	N/A	700	1550	Strong odor.
45			7	X	11	400	1620	Strong odor.
	Damp, brown, SILTY fine SAND (SM-SP), micaceous.							
50			8	X	11	400	1645	Strong odor.
55			9	X	11	+1000	1710	
	Damp, light yellowish brown, CLAYEY SILT (ML).							
60			10	X	11	100	1750	Slight to moderate odor.
	Bottom of Boring at 60.5 feet.							Note: Angle drilled at 26°. No blow counts taken due to angle drilling.
65								
70								
75								
80								

Project: DOUGLAS AIRCRAFT COMPANY
Project No.: 41863B

CONT. LOG OF BORING B-4

Fig. B-9-2

WOODWARD-CLYDE CONSULTANTS

APPENDIX C

APPENDIX C

WATER AND SOIL ANALYTICAL RESULTS WITH CHAIN-OF-CUSTODY FORMS

April 2, 1987

WOODWARD-CLYDE
203 N. Golden Circle Drive
Santa Ana, CA 92705

Attn: Allistair Callendar

JOB NO. 5557

WEST COAST
ANALYTICAL
SERVICE, INC.
ANALYTICAL CHEMISTS

LABORATORY REPORT

Samples: One (1) water sample
Date Received: 3-27-87
Purchase Order No: 41863B

The sample was analyzed for volatile organic compounds by GCMS according to EPA method 624. The results are reported in the following Organics Analysis Data Results sheets.

Michael Shelton
Senior Chemist

D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SAMPLE: MW-1(41)A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	03/27/87	GCMS FILENAME:	5557V3
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	04/01/87	DATE ANALYZED:	04/01/87
STANDARD ID:	V0A280	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	100UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	300.
74-83-9	BROMOMETHANE	ND	300.
75-01-4	VINYL CHLORIDE	ND	300.
75-00-3	CHLOROETHANE	ND	300.
75-09-2	METHYLENE CHLORIDE	ND	500.
67-64-1	ACETONE	ND	500.
107-02-8	ACROLEIN	ND	500.
107-13-1	ACRYLONITRILE	ND	500.
75-15-0	CARBON DISULFIDE	ND	50.
75-35-4	1,1-DICHLOROETHENE	2800.	50.
75-34-3	1,1-DICHLOROETHANE	ND	50.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	50
109-99-9	TETRAHYDROFURAN	ND	50.
75-69-4	TRICHLOROFLUOROMETHANE	ND	50
76-13-1	FREON-TF	ND	50.
106-93-4	ETHYLENE DIBROMIDE	ND	50.
123-91-1	1,4-DIOXANE	ND	50.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	50
67-66-3	CHLOROFORM	ND	50.
107-06-2	1,2-DICHLOROETHANE	ND	50.
78-93-3	2-BUTANONE	ND	500.
71-55-6	1,1,1-TRICHLOROETHANE	300.	50.
16-23-5	CARBON TETRACHLORIDE	ND	50.
108-05-4	VINYL ACETATE	ND	300.
75-27-4	BROMODICHLOROMETHANE	ND	50.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	50.
78-87-5	1,2-DICHLOROPROPANE	ND	50
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	50.
79-01-6	TRICHLOROETHENE	4600.	50.
124-48-1	DIBROMOCHLOROMETHANE	ND	50.
79-00-5	1,1,2-TRICHLOROETHANE	ND	50.
71-43-2	BENZENE	85	50.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	50
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	500.
75-25-2	BROMOFORM	ND	50.
119-78-6	2-HEXANONE	ND	300
108-10-1	4-METHYL-2-PENTANONE	ND	300
127-18-4	TETRACHLOROETHENE	ND	50
108-88-3	TOLUENE	ND	50.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SAMPLE: MW-1(41)A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	03/27/87	GCMS FILENAME:	5557V3
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	04/01/87	DATE ANALYZED:	04/01/87
STANDARD ID:	VOA280	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	100UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	50.
100-41-4	ETHYLBENZENE	ND	50.
100-42-5	STYRENE	ND	50.
95-47-6	TOTAL XYLENES	ND	50.
108-41-8	M-CHLOROTOLUENE	ND	50.
95-50-1	1,2-DICHLOROBENZENE	ND	50.
541-73-1	1,3-DICHLOROBENZENE	ND	50.
106-46-7	1,4-DICHLOROBENZENE	ND	50.
120-82-1	1,2,4-TRICHLOROBENZENE	ND	50.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SAMPLE: MW-1(41)A

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/L(PPB)
1	NONE FOUND	VOA	

Data Reporting Qualifiers

Value - If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.

ND - Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.

TR - Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

Woodward-Clyde Consultants

SHIPMENT NO.: _____

PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

DATE 3/27/87

PROJECT NAME: Douglas - Torrance

PROJECT NO.: 41863B

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required*
		Material	Method		Temp	Chemical	
MW-1(41)A		Water	Grab	40 ml Vial	Cool		8240 Halocarbons will call in Analysis
MW-1(41)B		"	"	40 ml Vial			
MW-1(41)C		"	"	Amber litre Bottle			
MW-1(41)D		"	"	Amber litre Bottle			
Trip Blank		"	"	40 ml Vial			

NOTE: Allow All sediment to settle out before taking Analysis sample.

Total Number of Samples Shipped: 5 | Sampler's Signature: Bryan Jacobs

Relinquished By: Signature: Bryan Jacobs Printed Name: Bryan Jacobs Company: Woodward-Clyde Reason: Analysis	Received By: Signature: Michael Shelton Printed Name: Michael Shelton Company: WCAS # 55557	Date: 3/27/87 Time: 5:42 pm
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

LA/OR-0163-421

April 16, 1987

WOODWARD-CLYDE
203 N. Golden Circle Drive
Santa Ana, CA 92705

Attn: Allistair Callendar

JOB NO. 5677

WCAS
WEST COAST ANALYTICAL SERVICE, INC.
ANALYTICAL CHEMISTS

LABORATORY REPORT

Samples: Seven (7) water samples
Date Received: 4-13-87
Purchase Order No: 41863B

Three of the samples were analyzed for volatile organic compounds by GCMS according to EPA method 624. The results are reported in the following Organics Analysis Data Results Sheets.

Michael Shelton
Senior Chemist

D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD CLYDE
SAMPLE: MW-1,A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	04/13/87	GCMS FILENAME:	5677V2
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	04/15/87	DATE ANALYZED:	04/15/87
STANDARD ID:	VOA457	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	100UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	300.
74-83-9	BROMOMETHANE	ND	300.
75-01-4	VINYL CHLORIDE	ND	300.
75-00-3	CHLOROETHANE	ND	300.
75-09-2	METHYLENE CHLORIDE	ND	500.
67-64-1	ACETONE	ND	500.
107-02-8	ACROLEIN	ND	500.
107-13-1	ACRYLONITRILE	ND	500.
75-15-0	CARBON DISULFIDE	ND	50.
75-35-4	1,1-DICHLOROETHENE	3700.	50.
75-34-3	1,1-DICHLOROETHANE	ND	50.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	50.
75-69-4	TRICHLOROFLUOROMETHANE	ND	50.
76-13-1	FREON-TF	ND	50.
106-93-4	ETHYLENE DIBROMIDE	ND	50.
123-91-1	1,4-DIOXANE	ND	50.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	50.
67-66-3	CHLOROFORM	ND	50.
107-06-2	1,2-DICHLOROETHANE	ND	50.
78-93-3	2-BUTANONE	ND	500.
71-55-6	1,1,1-TRICHLOROETHANE	260.	50.
16-23-5	CARBON TETRACHLORIDE	ND	50.
108-05-4	VINYL ACETATE	ND	300.
75-27-4	BROMODICHLOROMETHANE	ND	50.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	50.
78-87-5	1,2-DICHLOROPROPANE	ND	50.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	50.
79-01-6	TRICHLOROETHENE	5500.	50.
124-48-1	CHLORODIBROMOMETHANE	ND	50.
79-00-5	1,1,2-TRICHLOROETHANE	ND	50.
71-43-2	BENZENE	110.	50.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	50.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	500.
75-25-2	BROMOFORM	ND	50.
119-78-6	2-HEXANONE	ND	300.
108-10-1	4-METHYL-2-PENTANONE	ND	300.
127-18-4	TETRACHLOROETHENE	ND	50.
108-88-3	TOLUENE	ND	50.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD CLYDE
SAMPLE: MW-1,A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	04/13/87	QCMS FILENAME:	5677V2
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	04/15/87	DATE ANALYZED:	04/15/87
STANDARD ID:	VOA457	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	100UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	50.
100-41-4	ETHYLBENZENE	ND	50.
100-42-5	STYRENE	ND	50.
95-47-6	TOTAL XYLENES	ND	50.
108-41-8	M-CHLOROTOLUENE	ND	50.
541-73-1	1,3-DICHLOROBENZENE	ND	50.
106-46-7	1,4-DICHLOROBENZENE	ND	50.
95-50-1	1,2-DICHLOROBENZENE	ND	50.
120-82-1	1,2,4-TRICHLOROBENZENE	ND	50.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD CLYDE
SAMPLE: MW-1, A

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/L(PPB)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD CLYDE
SAMPLE: MW-1,B
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	04/13/87	GCMS FILENAME:	3677V3
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	04/15/87	DATE ANALYZED:	04/15/87
STANDARD ID:	VOA457	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	100UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	300.
74-83-9	BROMOMETHANE	ND	300.
75-01-4	VINYL CHLORIDE	ND	300.
75-00-3	CHLOROETHANE	ND	300.
75-09-2	METHYLENE CHLORIDE	ND	500.
67-64-1	ACETONE	ND	500.
107-02-8	ACROLEIN	ND	500.
107-13-1	ACRYLONITRILE	ND	500.
75-15-0	CARBON DISULFIDE	ND	50.
75-35-4	1,1-DICHLOROETHENE	2500.	50.
75-34-3	1,1-DICHLOROETHANE	ND	50.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	50.
109-99-9	TETRAHYDROFURAN	ND	50.
75-69-4	TRICHLOROFLUOROMETHANE	ND	50.
76-13-1	FREON-TF	ND	50.
106-93-4	ETHYLENE DIBROMIDE	ND	50.
123-91-1	1,4-DIOXANE	ND	50.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	50.
67-66-3	CHLOROFORM	ND	50.
107-06-2	1,2-DICHLOROETHANE	ND	50.
78-93-3	2-BUTANONE	ND	500.
71-55-6	1,1,1-TRICHLOROETHANE	120.	50.
16-23-5	CARBON TETRACHLORIDE	ND	50.
108-05-4	VINYL ACETATE	ND	300.
75-27-4	BROMODICHLOROMETHANE	ND	50.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	50.
78-87-5	1,2-DICHLOROPROPANE	ND	50.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	50.
79-01-6	TRICHLOROETHENE	3600.	50.
124-48-1	CHLORODIBROMOMETHANE	ND	50.
79-00-5	1,1,2-TRICHLOROETHANE	ND	50.
71-43-2	BENZENE	ND	50.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	50.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	500.
75-25-2	BROMOFORM	ND	50.
119-78-6	2-HEXANONE	ND	300.
108-10-1	4-METHYL-2-PENTANONE	ND	300.
127-18-4	TETRACHLOROETHENE	ND	50.
108-88-3	TOLUENE	ND	50.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD CLYDE
SAMPLE: MW-1,B
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	04/13/87	GCMS FILENAME:	5677V3
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	04/15/87	DATE ANALYZED:	04/15/87
STANDARD ID:	VOA457	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	100UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	50.
100-41-4	ETHYLBENZENE	ND	50.
100-42-5	STYRENE	ND	50.
95-47-6	TOTAL XYLENES	ND	50.
108-41-8	M-CHLOROTOLUENE	ND	50.
541-73-1	1,3-DICHLOROBENZENE	ND	50.
106-46-7	1,4-DICHLOROBENZENE	ND	50.
95-50-1	1,2-DICHLOROBENZENE	ND	50.
120-82-1	1,2,4-TRICHLOROBENZENE	ND	50.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD CLYDE
SAMPLE: MW-1,B

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/L(PPB)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD CLYDE
SAMPLE: TRIP BLANK
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	04/13/87	GCMS FILENAME:	5677V4
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	04/15/87	DATE ANALYZED:	04/15/87
STANDARD ID:	VOA457	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	5.0ML		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	5.
74-83-9	BROMOMETHANE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
75-00-3	CHLOROETHANE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	10.
67-64-1	ACETONE	ND	10.
107-02-8	ACROLEIN	ND	10.
107-13-1	ACRYLONITRILE	ND	10.
75-15-0	CARBON DISULFIDE	ND	1.
75-35-4	1,1-DICHLOROETHENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
76-13-1	FREON-TF	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
123-91-1	1,4-DIOXANE	ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	1.
67-66-3	CHLOROFORM	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
78-93-3	2-BUTANONE	ND	10.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
16-23-5	CARBON TETRACHLORIDE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
79-01-6	TRICHLOROETHENE	ND	1.
124-48-1	CHLORODIBROMOMETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
71-43-2	BENZENE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
75-25-2	BROMOFORM	ND	1.
119-78-6	2-HEXANONE	ND	5.
108-10-1	4-METHYL-2-PENTANONE	ND	5.
127-18-4	TETRACHLOROETHENE	ND	1.
108-88-3	TOLUENE	ND	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD CLYDE
SAMPLE: TRIP BLANK
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	04/13/87	GCMS FILENAME:	5677V4
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	04/15/87	DATE ANALYZED:	04/15/87
STANDARD ID:	VOA457	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	5.0ML		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
100-42-5	STYRENE	ND	1.
95-47-6	TOTAL XYLENES	ND	1.
108-41-8	M-CHLOROTOLUENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
120-82-1	1,2,4-TRICHLOROBENZENE	ND	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD CLYDE
SAMPLE: TRIP BLANK

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/L(PPB)
1	NONE FOUND	VOA	

Woodward-Clyde Consultants

SHIPMENT NO.: _____

PAGE 1 OF 1

DATE 4/13/87

CHAIN OF CUSTODY RECORD

PROJECT NAME: Douglas - Torrance

PROJECT NO.: 41863B

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
MW-1(41)A		Water	Bailed	40 ml Vial	Cool		8240
" B		"	"	40 ml Vial			8240
" C		"	"	500 ml Amber			Hold SAMPLES
" D		"	"	500 ml Amber			
" E		"	"	500 ml Amber			
" F		"	"	500 ml Amber			
TMP Blank		"		40 ml Vial			8240

Total Number of Samples Shipped: 7

Sampler's Signature: Brian Quiett

Relinquished By: Signature: Brian Quiett; Printed Name: Brian Jacobs; Company: Woodward-Clyde; Reason: Analysis	Received By: Signature: Margaret Falt; Printed Name: Margaret Falt; Company: WCAS	Date: 4/13/87; Time: 4:53
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	Received By: Signature: ; Printed Name: ; Company:	Date: / / ; Time:
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	Received By: Signature: ; Printed Name: ; Company:	Date: / / ; Time:
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	Received By: Signature: ; Printed Name: ; Company:	Date: / / ; Time:

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

BOE-C6-0220959

November 11, 1987

WOODWARD-CLYDE
203 N. Golden Circle Drive
Santa Ana, CA 92705

Attn: Brian Jacobs

JOB NO. 7621

WCAS
WEST COAST ANALYTICAL SERVICE, INC.
ANALYTICAL CHEMISTS

LABORATORY REPORT

Samples Received: Four (4) water samples in duplicate
Date Received: 11-2-87
Purchase Order No: Proj: 87418630-1000/Douglas

The samples were analyzed as follows:

Samples Analyzed	Analysis	Results
Three waters	Volatile Organics by EPA 624	Data Sheets
Three waters	Fuel Hydrocarbons by modified EPA 8015	Table I

TABLE I

Parts Per Million

Sample No.	Gasoline	Diesel Fuel	Kerosene	Mineral Spirits
MW-2B	ND	ND	ND	ND
MW-3B	ND	ND	ND	ND
MW-4B	ND	ND	ND	ND
Detection Limit	2	2	2	2

ND - Not Detected

Date Analyzed: 11-5-87

Mary C. Shelton
for Michael Shelton
Senior Chemist

B. Michael Havens for
D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-2A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/02/87	GCMS FILENAME:	7621V1
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/11/87	DATE ANALYZED:	11/11/87
STANDARD ID:	VOA608	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	5ML		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	5.
74-83-9	BROMOMETHANE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
75-00-3	CHLOROETHANE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	10.
67-64-1	ACETONE	ND	10.
107-02-8	ACROLEIN	ND	10.
107-13-1	ACRYLONITRILE	ND	10.
75-15-0	CARBON DISULFIDE	ND	1.
75-35-4	1,1-DICHLOROETHENE	5.	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
76-13-1	FREON-TF	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
123-91-1	1,4-DIOXANE	ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	1.
67-66-3	CHLOROFORM	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
78-93-3	2-BUTANONE	ND	10.
71-55-6	1,1,1-TRICHLOROETHANE	5.	1.
16-23-5	CARBON TETRACHLORIDE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
79-01-6	TRICHLOROETHENE	14.	1.
124-48-1	CHLORODIBROMOMETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
71-43-2	BENZENE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
75-25-2	BROMOFORM	ND	1.
119-78-6	2-HEXANONE	ND	5.
108-10-1	4-METHYL-2-PENTANONE	ND	5.
127-18-4	TETRACHLOROETHENE	ND	1.
108-88-3	TOLUENE	6.	1.

WCAS

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-2A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/02/87	GCMS FILENAME:	7621V1
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/11/87	DATE ANALYZED:	11/11/87
STANDARD ID:	VOA608	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	5ML		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
100-42-5	STYRENE	ND	1.
95-47-6	TOTAL XYLENES	ND	1.
108-41-8	M-CHLOROTOLUENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-2A

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/L(PPB)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-3A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/02/87	GCMS FILENAME:	7621V3
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/11/87	DATE ANALYZED:	11/11/87
STANDARD ID:	VOA608	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	5UL		

CAS #	COMPOUND	CONC: UG/ML(PPM)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	5.
74-83-9	BROMOMETHANE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
75-00-3	CHLOROETHANE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	10.
67-64-1	ACETONE	ND	10.
107-02-8	ACROLEIN	ND	10.
107-13-1	ACRYLONITRILE	ND	10.
75-15-0	CARBON DISULFIDE	ND	1.
75-35-4	1,1-DICHLOROETHENE	38.	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
76-13-1	FREON-TF	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
123-91-1	1,4-DIOXANE	ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	1.
67-66-3	CHLOROFORM	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
78-93-3	2-BUTANONE	ND	10.
71-55-6	1,1,1-TRICHLOROETHANE	110.	1.
16-23-5	CARBON TETRACHLORIDE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
79-01-6	TRICHLOROETHENE	10.	1.
124-48-1	CHLORODIBROMOMETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
71-43-2	BENZENE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
75-25-2	BROMOFORM	ND	1.
119-78-6	2-HEXANONE	ND	5.
108-10-1	4-METHYL-2-PENTANONE	54.	5.
127-18-4	TETRACHLOROETHENE	ND	1.
108-88-3	TOLUENE	80.	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-3A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/02/87	GCMS FILENAME:	7621V3
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/11/87	DATE ANALYZED:	11/11/87
STANDARD ID:	VOA608	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	5UL		

CAS #	COMPOUND	CONC: UG/ML(PPM)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
100-42-5	STYRENE	ND	1.
95-47-6	TOTAL XYLENES	ND	1.
108-41-8	M-CHLOROTOLUENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-3A

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/ML(PPM)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-4A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/02/87	GCMS FILENAME:	7621V2
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/11/87	DATE ANALYZED:	11/11/87
STANDARD ID:	VOA608	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	5ML		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	5.
74-83-9	BROMOMETHANE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
75-00-3	CHLOROETHANE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	10.
67-64-1	ACETONE	ND	10.
107-02-8	ACROLEIN	ND	10.
107-13-1	ACRYLONITRILE	ND	10.
75-15-0	CARBON DISULFIDE	ND	1.
75-35-4	1,1-DICHLOROETHENE	360.	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHENE	2.	1.
109-99-9	TETRAHYDROFURAN	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
76-13-1	FREON-TF	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
123-91-1	1,4-DIOXANE	ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	1.
67-66-3	CHLOROFORM	2.	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
78-93-3	2-BUTANONE	ND	10.
71-55-6	1,1,1-TRICHLOROETHANE	14.	1.
16-23-5	CARBON TETRACHLORIDE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
79-01-6	TRICHLOROETHENE	700.	1.
124-48-1	CHLORODIBROMOMETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
71-43-2	BENZENE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
75-25-2	BROMOFORM	ND	1.
119-78-6	2-HEXANONE	ND	5.
108-10-1	4-METHYL-2-PENTANONE	ND	5.
127-18-4	TETRACHLOROETHENE	ND	1.
108-88-3	TOLUENE	ND	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-4A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/02/87	GCMS FILENAME:	7621V2
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/11/87	DATE ANALYZED:	11/11/87
STANDARD ID:	VOA608	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	5ML		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
100-42-5	STYRENE	ND	1.
95-47-6	TOTAL XYLENES	ND	1.
108-41-8	M-CHLOROTOLUENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-4A

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/L(PPB)
1	CIS-1,2-DICHLOROETHYLENE	VOA	10.

Data Reporting Qualifiers

Value - If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.

ND - Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.

TR - Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

Woodward-Clyde Consultants

SHIPMENT NO.:_____

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 11 12 87

PROJECT NAME: Douglas

PROJECT NO.: 87418630 - 1000

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
MW-2A		Water	Bailer	Glass Vial	ICED	NONE	8240
" " B							Hold
MW-3A						HCl	8240
" " B							Hold
MW-4A							8240
" " B							Hold
MW-3RB/A				gone			[redacted] Hold
" " /B		↓	↓	↓	↓	↓	Hold

Total Number of Samples Shipped: 8 | Sampler's Signature: [signature]

Relinquished By:
Signature: [signature]
Printed Name: Brian Jacobs
Company: [illegible]
Reason: Transport

Received By:
Signature: [signature]
Printed Name: Mel Franklin
Company: A-1
Date: 11/12/87
Time:

Relinquished By:
Signature: [signature]
Printed Name: MEL FRANKLIN
Company: A-1
Reason:

Received By: #7621
Signature: [signature]
Printed Name: Rita Lam
Company: WCC
Date: 11/12/87
Time: 1720

Relinquished By:
Signature:
Printed Name:
Company:
Reason:

Received By:
Signature:
Printed Name:
Company:
Date: / /
Time:

Relinquished By:
Signature:
Printed Name:
Company:
Reason:

Received By:
Signature:
Printed Name:
Company:
Date: / /
Time:

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

LA/OR-0183-421

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-1A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/13/87	GCMS FILENAME:	7761V2
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/16/87	DATE ANALYZED:	11/16/87
STANDARD ID:	VOA450	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	250UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	100.
74-83-9	BROMOMETHANE	ND	100.
75-01-4	VINYL CHLORIDE	ND	100.
75-00-3	CHLOROETHANE	ND	100.
75-09-2	METHYLENE CHLORIDE	ND	200.
67-64-1	ACETONE	ND	200.
107-02-8	ACROLEIN	ND	200.
107-13-1	ACRYLONITRILE	ND	200.
75-15-0	CARBON DISULFIDE	ND	20.
75-35-4	1,1-DICHLOROETHENE	3000.	20.
75-34-3	1,1-DICHLOROETHANE	23.	20.
156-60-5	TRANS-1,2-DICHLOROETHENE	75.	20.
109-99-9	TETRAHYDROFURAN	ND	20.
75-69-4	TRICHLOROFLUOROMETHANE	ND	20.
76-13-1	FREON-TF	ND	20.
106-93-4	ETHYLENE DIBROMIDE	ND	20.
123-91-1	1,4-DIOXANE	ND	20.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	20.
67-66-3	CHLOROFORM	39.	20.
107-06-2	1,2-DICHLOROETHANE	ND	20.
78-93-3	2-BUTANONE	ND	200.
71-55-6	1,1,1-TRICHLOROETHANE	160.	20.
16-23-5	CARBON TETRACHLORIDE	ND	20.
108-05-4	VINYL ACETATE	ND	100.
75-27-4	BROMODICHLOROMETHANE	ND	20.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	20.
78-87-5	1,2-DICHLOROPROPANE	ND	20.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	20.
79-01-6	TRICHLOROETHENE	5200.	20.
124-48-1	DIBROMOCHLOROMETHANE	ND	20.
79-00-5	1,1,2-TRICHLOROETHANE	ND	20.
71-43-2	BENZENE	160.	20.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	20.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	200.
75-25-2	BROMOFORM	ND	20.
119-78-6	2-HEXANONE	ND	100.
108-10-1	4-METHYL-2-PENTANONE	ND	100.
127-18-4	TETRACHLOROETHENE	ND	20.
108-88-3	TOLUENE	ND	20.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-1A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/13/87	GCMS FILENAME:	7761V2
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/16/87	DATE ANALYZED:	11/16/87
STANDARD ID:	VOA450	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	250UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	20.
100-41-4	ETHYLBENZENE	ND	20.
100-42-5	STYRENE	ND	20.
95-47-6	TOTAL XYLENES	ND	20.
108-41-8	M-CHLOROTOLUENE	ND	20.
95-50-1	1,2-DICHLOROBENZENE	ND	20.
541-73-1	1,3-DICHLOROBENZENE	ND	20.
106-46-7	1,4-DICHLOROBENZENE	ND	20.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-1A

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/L(PPB)
1	CIS-1,2-DICHLOROETHYLENE	VOA	200.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-2A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/13/87	GCMS FILENAME:	7761V4
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/16/87	DATE ANALYZED:	11/16/87
STANDARD ID:	V0A450	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	5ML		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	5.
74-83-9	BROMOMETHANE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
75-00-3	CHLOROETHANE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	10.
67-64-1	ACETONE	ND	10.
107-02-8	ACROLEIN	ND	10.
107-13-1	ACRYLONITRILE	ND	10.
75-15-0	CARBON DISULFIDE	ND	1.
75-35-4	1,1-DICHLOROETHENE	2.	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
76-13-1	FREON-TF	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
123-91-1	1,4-DIOXANE	ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	1.
67-66-3	CHLOROFORM	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
78-93-3	2-BUTANONE	ND	10.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
16-23-5	CARBON TETRACHLORIDE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
79-01-6	TRICHLOROETHENE	4.	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
71-43-2	BENZENE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
75-25-2	BROMOFORM	ND	1.
119-78-6	2-HEXANONE	ND	5.
108-10-1	4-METHYL-2-PENTANONE	ND	5.
127-18-4	TETRACHLOROETHENE	ND	1.
108-88-3	TOLUENE	1.	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-2A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/13/87	GCMS FILENAME:	7761V4
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/16/87	DATE ANALYZED:	11/16/87
STANDARD ID:	VOA450	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	5ML		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
100-42-5	STYRENE	ND	1.
95-47-6	TOTAL XYLENES	ND	1.
108-41-8	M-CHLOROTOLUENE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-2A

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/L(PPB)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-3A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/13/87	GCMS FILENAME:	7761V6
LEVEL:	MEDIUM	MATRIX:	WATER
DATE PREPARED:	11/17/87	DATE ANALYZED:	11/17/87
STANDARD ID:	VOA451	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	5UL		

CAS #	COMPOUND	CONC: UG/ML(PPM)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	5.
74-83-9	BROMOMETHANE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
75-00-3	CHLOROETHANE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	10.
67-64-1	ACETONE	ND	10.
107-02-8	ACROLEIN	ND	10.
107-13-1	ACRYLONITRILE	ND	10.
75-15-0	CARBON DISULFIDE	ND	1.
75-35-4	1,1-DICHLOROETHENE	88.	1.
75-34-3	1,1-DICHLOROETHANE	1.	1.
156-60-5	TRANS-1,2-DICHLOROETHENE	1.	1.
109-99-9	TETRAHYDROFURAN	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
76-13-1	FREON-TF	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
123-91-1	1,4-DIOXANE	ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	1.
67-66-3	CHLOROFORM	ND	1.
107-06-2	1,2-DICHLOROETHANE	0. TR	1.
78-93-3	2-BUTANONE	5. TR	10.
71-55-6	1,1,1-TRICHLOROETHANE	54.	1.
16-23-5	CARBON TETRACHLORIDE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
79-01-6	TRICHLOROETHENE	11.	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
71-43-2	BENZENE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
75-25-2	BROMOFORM	ND	1.
119-78-6	2-HEXANONE	ND	5.
108-10-1	4-METHYL-2-PENTANONE	70.	5.
127-18-4	TETRACHLOROETHENE	ND	1.
108-88-3	TOLUENE	140.	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-3A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/13/87	GCMS FILENAME:	7761V6
LEVEL:	MEDIUM	MATRIX:	WATER
DATE PREPARED:	11/17/87	DATE ANALYZED:	11/17/87
STANDARD ID:	V0A451	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	5UL		

CAS #	COMPOUND	CONC: UG/ML(PPM)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
100-42-5	STYRENE	ND	1.
95-47-6	TOTAL XYLENES	ND	1.
108-41-8	M-CHLOROTOLUENE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-3A

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/ML(PPM)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-4A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/13/87	GCMS FILENAME:	7761V8
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/17/87	DATE ANALYZED:	11/17/87
STANDARD ID:	V0A451	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	500UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	50.
74-83-9	BROMOMETHANE	ND	50.
75-01-4	VINYL CHLORIDE	ND	50.
75-00-3	CHLOROETHANE	ND	50.
75-09-2	METHYLENE CHLORIDE	ND	100.
67-64-1	ACETONE	ND	100.
107-02-8	ACROLEIN	ND	100.
107-13-1	ACRYLONITRILE	ND	100.
75-15-0	CARBON DISULFIDE	ND	10.
75-35-4	1,1-DICHLOROETHENE	1200.	10.
75-34-3	1,1-DICHLOROETHANE	ND	10.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	10.
109-99-9	TETRAHYDROFURAN	ND	10.
75-69-4	TRICHLOROFLUOROMETHANE	ND	10.
76-13-1	FREON-TF	ND	10.
106-93-4	ETHYLENE DIBROMIDE	ND	10.
123-91-1	1,4-DIOXANE	ND	10.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	10.
67-66-3	CHLOROFORM	ND	10.
107-06-2	1,2-DICHLOROETHANE	ND	10.
78-93-3	2-BUTANONE	ND	100.
71-55-6	1,1,1-TRICHLOROETHANE	35.	10.
16-23-5	CARBON TETRACHLORIDE	ND	10.
108-05-4	VINYL ACETATE	ND	50.
75-27-4	BROMODICHLOROMETHANE	ND	10.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	10.
78-87-5	1,2-DICHLOROPROPANE	ND	10.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	10.
79-01-6	TRICHLOROETHENE	690.	10.
124-48-1	DIBROMOCHLOROMETHANE	ND	10.
79-00-5	1,1,2-TRICHLOROETHANE	ND	10.
71-43-2	BENZENE	ND	10.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	10.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	100.
75-25-2	BROMOFORM	ND	10.
119-78-6	2-HEXANONE	ND	50.
108-10-1	4-METHYL-2-PENTANONE	ND	50.
127-18-4	TETRACHLOROETHENE	ND	10.
108-88-3	TOLUENE	ND	10.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-4A
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	11/13/87	GCMS FILENAME:	7761V8
LEVEL:	LOW	MATRIX:	WATER
DATE PREPARED:	11/17/87	DATE ANALYZED:	11/17/87
STANDARD ID:	V0A451	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	500UL		

CAS #	COMPOUND	CONC: UG/L(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	10.
100-41-4	ETHYLBENZENE	ND	10.
100-42-5	STYRENE	ND	10.
95-47-6	TOTAL XYLENES	ND	10.
108-41-8	M-CHLOROTOLUENE	ND	10.
95-50-1	1,2-DICHLOROBENZENE	ND	10.
541-73-1	1,3-DICHLOROBENZENE	ND	10.
106-46-7	1,4-DICHLOROBENZENE	ND	10.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: WCC-4A

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/L(PPB)
1	NONE FOUND	VOA	

Data Reporting Qualifiers

Value - If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.

ND - Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.

TR - Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

Woodward-Clyde Consultants

SHIPMENT NO.:_____

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NAME: Douglas Aircraft

DATE 11/13/87

PROJECT NO.: 8741863 E

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required*
		Material	Method		Temp	Chemical	
WCC-1A		Water	Bailer	Glass Vial	ICED	None	8240
" " B							Hold
WCC-2A							8240
" " B							Hold
WCC-3A							8240
" " B							Hold
WCC-4A							8240
" " B							Hold
							TWSH

Total Number of Samples Shipped: 8 | Sampler's Signature: Brian Jacobs

Relinquished By: Signature: Brian Jacobs Printed Name: Brian Jacobs Company: Woodward-Clyde Reason: Analysis	Received By: Signature: #7761 Printed Name: Lisa Lau Company: WCAS	Date: 11/13/87 Time: 2:50 pm
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date / Time

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

LA/OR–0183–421

December 31, 1986

WEST COAST ANALYTICAL SERVICE, INC.
ANALYTICAL CHEMISTS

WOODWARD-CLYDE
203 No. Golden Circle Drive
Santa Ana, CA 92705

Attn: Kevin Gibson

JOB NO. 4932

LABORATORY REPORT

Samples: Two (2) soil samples
Date Received: 12-29-86
Purchase Order No: Project 41863B

The samples were analyzed for total petroleum hydrocarbon content using EPA method 418.1. The results are listed below:

Sample No.	Parts Per Million Total Petroleum Hydrocarbons
B2-2-3 at 5'	5000
B2-7-3 at 30'	6000
Detection Limit	10

Date Analyzed: 12-30-86

Isabella Gundran
Chemist

D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

Woodward-Clyde Consultants

SHIPMENT NO.: _____

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NAME: Douglas Aircraft C6

DATE 12 12 91 86

PROJECT NO.: 41963B

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
	B2						
~~B2-1-3~~	B2 1'	SOIL	CAMOD	BRASS TUBE	ICE		~~HOLD~~
B2-1-4							HOLD
B2-2-3	5'						E.P.A. 418.1 (*)
B2-2-4							HOLD
B2-3-3	10'						HOLD
B2-3-4							"
B2-4-3	15'						HOLD
B2 4-4							"
B2 5-3	20'						HOLD
B2 5-4							"
B2 7-3	30'						EPA 418.1 (*)
~~B2 6-3~~	25'						~~HOLD~~
B2 6-4							HOLD
~~B2 7-3~~	30'						~~EPA 418.1~~
B2 7-4							HOLD ~~EPA 418.1~~

Total Number of Samples Shipped: 12 Sampler's Signature: Kevin R. Gibson / BRIAN JACOBS

Relinquished By: Signature: Kevin R. Gibson; Printed Name: KEVIN R. GIBSON; Company: WCC; Reason: TESTING	Received By: Signature: Shelley Rinkel; Printed Name: SHELLEY RINKER; Company: WCAS	Date: 12/29/91; Time: 3:20
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	Received By: Signature: ; Printed Name: ; Company:	Date: / / ; Time:
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	Received By: Signature: ; Printed Name: ; Company:	Date: / / ; Time:
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	Received By: Signature: ; Printed Name: ; Company:	Date: / / ; Time:

Special Shipment / Handling / Storage Requirements: #4932

(*) Please hold samples as noted above until told to do otherwise, which will be done w/in 3 working days of receipt of [illegible]

* Note – This does not constitute authorization to proceed with analysis

LA/OR–0183–421

January 9, 1987

WOODWARD-CLYDE
203 N. Golden Circle Drive
Santa Ana, CA 92705

Attn: Kevin Gibson

JOB NO. 4968

WCAS
WEST COAST ANALYTICAL SERVICE, INC.
ANALYTICAL CHEMISTS

LABORATORY REPORT

Samples: Nineteen (19) soil samples
Date Received: 1-6-87
Purchase Order No: 41863B

Ten (10) samples were analyzed for total petroleum hydrocarbons by EPA method 418.1. The results are reported below:

	Parts Per Million
Sample.No.	Total Petroleum Hydrocarbons
2-7-4	14000
2-8-4	2000
2-9-4	2000
2-10-4	19000
3-1-4	2900
3-2-4	27
3-3-4	1200
3-4-4	4400
3-5-3	13000
3-6-3	4100
Detection Limit	10

Date Extracted: 1-8-87
Date Analyzed: 1-8-87

Isabelle Gundran
Chemist.

D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

Woodward-Clyde Consultants

SHIPMENT NO.:_____

CHAIN OF CUSTODY RECORD

PAGE 1 OF _____

DATE 1 16 87

PROJECT NAME: DOUGLAS AIRCRAFT

PROJECT NO.: 418630

#4968

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
2-7-3	B-2	Soil		BRASS TUBE	ICE		HOLD
2-7-4							E.P.A. 418.1, TPH
2-8-3							HOLD
2-8-4							418.1, TPHC
2-9-3							HOLD
2-9-4							418.1, TPHC
2-10-4							418.1, TPHC
3-1-3	B-3						HOLD
3-1-4							418.1 TPHC
3-2-3							HOLD
3-2-4							418.1 TPHC
3-3-3							HOLD
3-3-4							418.1 TPHC
3-4-3							HOLD
3-4-4							418.1 TPHC
3-5-3							HOLD
3-5-4 3							418.1 TPHC
3-6-2							HOLD
3-6-3							418.1 TPHC

Total Number of Samples Shipped: 19 | Sampler's Signature: Kevin R. Gibson / Engineering Geologist

Relinquished By: Signature: Kevin R. Gibson; Printed Name: Kevin R. Gibson; Company: WCC; Reason: TESTING	**Received By:** Signature: Margaret Falt; Printed Name: Margaret Falt; Company: WCAS	Date: 1/16/87; Time: 4:15pm
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	**Received By:** Signature: ; Printed Name: ; Company:	Date: / / ; Time:
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	**Received By:** Signature: ; Printed Name: ; Company:	Date: / / ; Time:
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	**Received By:** Signature: ; Printed Name: ; Company:	Date: / / ; Time:

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

LA/OR–0183–421

June 5, 1987

RECEIVED
JUN 08 1987
WCC-SANTA ANA

WEST COAST ANALYTICAL SERVICE, INC.
ANALYTICAL CHEMISTS

WOODWARD-CLYDE
203 N. Golden Circle Drive
Santa Ana, CA 92705

Attn: Allistaire Callendar

JOB NO. 6039

LABORATORY REPORT

Samples: Seventeen (17) soil samples
Date Received: 5-27-87
Purchase Order No: 41863B

Nine (9) soil samples were analyzed for total petroleum hydrocarbon content using EPA Method 418.1. The results are on Table I.

Table I

Parts Per Million

Sample No.	Total Petroleum Hydrocarbon
B-4-1-2	ND
B-4-2-2	15000
B-4-3-2	44000
B-4-4-2	8200
B-4-5-2	28000
B-4-6-2	6000
B-4-7-2	1500
B-4-9-2	16000
B-4-10-2	ND
Detection Limit:	10

ND - Not Detected
Date Analyzed: 6-4-87

Isabelle Gundran
Analytical Chemist

D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

Woodward-Clyde Consultants

SHIPMENT NO.: 1

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NAME: DOUGLAS AIRCRAFT

DATE 5/26/86

PROJECT NO.: 41863B

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
B-4-1-2	B-4	SOIL	BORING	BRASS TUBE	ICE	NONE	TO BE PROVIDED
B-4-1-3	"	"	"	"	"	"	BY ALLEGARO
B-4-2-2	"	"	"	"	"	"	CALENDAR
B-4-2-3	"	"	"	"	"	"	(714) 835-6886
B-4-3-2	"	"	"	"	"	"	
B-4-3-3	"	"	"	"	"	"	
B-4-4-2	"	"	"	"	"	"	
B-4-4-3	"	"	"	"	"	"	
B-4-5-2	"	"	"	"	"	"	
B-4-5-3	"	"	"	"	"	"	
B-4-6-2	"	"	"	"	"	"	
B-4-6-3	"	"	"	"	"	"	
B-4-7-2	"	"	"	"	"	"	
B-4-7-3	"	"	"	"	"	"	
B-4-9-2	"	"	"	"	"	"	
B-4-10-2	"	"	"	"	"	"	
B-4-10-3	"	"	"	"	"	"	

Total Number of Samples Shipped: 17 | Sampler's Signature:

Relinquished By: Signature / Printed Name: PETER GUARSMAN / Company: WOODWARD CLYDE CONSULTANTS / Reason: FOR TRANSPORTING TO LABORATORY	Received By: Signature / Printed Name: ORLANDO HERNANDEZ / Company: Woodward Clyde Consultants	Date: 5/27/87 Time: 1 P.M.
Relinquished By: Signature / Printed Name: ORLANDO HERNANDEZ / Company: Woodward Clyde / Reason: Deliver for Analysis -	Received By: Signature / Printed Name: Margaret Felt / Company: WCAS #6089	Date: 5/27/87 Time: 1630
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date: / / Time
Relinquished By: Signature / Printed Name / Company / Reason	Received By: Signature / Printed Name / Company	Date: / / Time

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

LA/OR-0183-421

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 15TB-3-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V1
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	18.	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	570.	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	56.	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 15TB-3-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V1
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	11.	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	110.	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 15TB-3-3

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/KG(PPB)
1	CHLORINATED HYDROCARBONS	VOA	300.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 15TB-4-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V7
LEVEL:	MEDIUM	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G:1ML,200UL:1ML,5		

CAS #	COMPOUND	CONC: UG/G(PPM)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	160.	50.
71-55-6	1,1,1-TRICHLOROETHANE	27.	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	10.	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	870.	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 15TB-4-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V7
LEVEL:	MEDIUM	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G:1ML,200UL:1ML,5		

CAS #	COMPOUND	CONC: UG/G(PPM)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	41.	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	460.	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 15TB-4-3

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/G(PPM)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 15TB-5-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V8
LEVEL:	MEDIUM	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G:1ML,100UL:1ML,5		

CAS #	COMPOUND	CONC: UG/G(PPM)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	50.
74-83-9	BROMOMETHANE	ND	50.
75-01-4	VINYL CHLORIDE	ND	50.
75-00-3	CHLOROETHANE	ND	50.
75-09-2	METHYLENE CHLORIDE	ND	100.
67-64-1	ACETONE	ND	100.
107-02-8	ACROLEIN	ND	100.
107-13-1	ACRYLONITRILE	ND	100.
75-15-0	CARBON DISULFIDE	ND	10.
75-35-4	1,1-DICHLOROETHENE	ND	10.
75-34-3	1,1-DICHLOROETHANE	ND	10.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	10.
109-99-9	TETRAHYDROFURAN	ND	10.
75-69-4	TRICHLOROFLUOROMETHANE	ND	10.
76-13-1	FREON-TF	ND	10.
106-93-4	ETHYLENE DIBROMIDE	ND	10.
123-91-1	1,4-DIOXANE	ND	10.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	10.
67-66-3	CHLOROFORM	ND	10.
107-06-2	1,2-DICHLOROETHANE	ND	10.
78-93-3	2-BUTANONE	1800.	100.
71-55-6	1,1,1-TRICHLOROETHANE	38.	10.
16-23-5	CARBON TETRACHLORIDE	ND	10.
108-05-4	VINYL ACETATE	ND	50.
75-27-4	BROMODICHLOROMETHANE	ND	10.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	10.
78-87-5	1,2-DICHLOROPROPANE	ND	10.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	10.
79-01-6	TRICHLOROETHENE	94.	10.
124-48-1	DIBROMOCHLOROMETHANE	ND	10.
79-00-5	1,1,2-TRICHLOROETHANE	ND	10.
71-43-2	BENZENE	ND	10.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	10.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	100.
75-25-2	BROMOFORM	ND	10.
119-78-6	2-HEXANONE	ND	50.
108-10-1	4-METHYL-2-PENTANONE	ND	50.
127-18-4	TETRACHLOROETHENE	ND	10.
108-88-3	TOLUENE	6300.	10.

WCAS

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 15TB-5-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V8
LEVEL:	MEDIUM	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G:1ML,100UL:1ML,5		

CAS #	COMPOUND	CONC: UG/G(PPM)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	10.
100-41-4	ETHYLBENZENE	180.	10.
100-42-5	STYRENE	ND	10.
95-47-6	TOTAL XYLENES	1300.	10.
108-41-8	M-CHLOROTOLUENE	ND	10.
95-50-1	1,2-DICHLOROBENZENE	ND	10.
541-73-1	1,3-DICHLOROBENZENE	ND	10.
106-46-7	1,4-DICHLOROBENZENE	ND	10.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 15TB-5-3

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/G(PPM)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-2-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V2
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-2-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V2
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-2-3

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/KG(PPB)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-3-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V3
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	36.	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	8.	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-3-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V3
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-3-3

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/KG(PPB)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-5-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V4
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	14.	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	13.	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	7.	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-5-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V4
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-5-3

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/KG(PPB)
1	1,3-DIOXOLANE	VOA	600.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-7-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V11
LEVEL:	MEDIUM	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G:1ML,200UL:1ML,5		

CAS #	COMPOUND	CONC: UG/G(PPM)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	810.	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	840.	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-7-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	08/24/87	GCMS FILENAME:	6926V11
LEVEL:	MEDIUM	MATRIX:	SOIL
DATE PREPARED:	09/01/87	DATE ANALYZED:	09/01/87
STANDARD ID:	VOA397	INSTRUMENT ID:	5101
SAMPLE AMOUNT:	1.0G:1ML,200UL:1ML,5		

CAS #	COMPOUND	CONC: UG/G(PPM)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: 17TB-7-3

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/G(PPM)
1	NONE FOUND	VOA	

Data Reporting Qualifiers

Value - If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.

ND - Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.

TR - Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

Woodward-Clyde Consultants

SHIPMENT NO.: 3

CHAIN OF CUSTODY RECORD

PAGE 1 OF 2

DATE 8 12 87

PROJECT NAME: DOUGLAS AIRCRAFT

PROJECT NO.: 8741863C-1000

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
15TB-1-3	15TB	SOIL	MOD.	BRASS TUBE	ICE	NONE	CONTACT
15TB-2-3	"	"	CALIF.	"	"	"	ALISTAIRE
15TB-3-3	"	"	"	"	"	8240	CALLENDAR
15TB-4-3	"	"	"	"	"	"	714-835-6886
15TB-5-3	"	"	"	"	"	"	
15TB-6-3							
15TB-7-3							
15TB-8-3							
15TB-9-3							
17TB-1-3	17TB					8240	
17TB-2-3	"					"	
17TB-3-3	"						
17TB-4-3						8240	
17TB-5-3							
17TB-6-3						8240	
17TB-7-3							
17TB-8-3							
17TB-9-3							
19TW-1-3	19TW						
19TW-2-3							

Total Number of Samples Shipped: 37 | Sampler's Signature: [signature]

Relinquished By: Signature [signature] Printed Name DAN SUGERETSON Company WCC Reason	Received By: Signature [signature] Printed Name G.K. Daniels Company LACAS #6926	Date 8/24/87 Time 1805
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time
Relinquished By: Signature Printed Name Company Reason	Received By: Signature Printed Name Company	Date / / Time

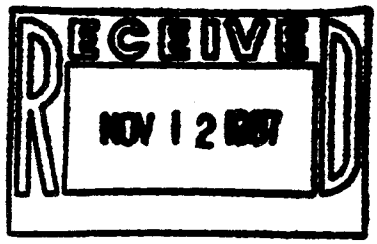
Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

LA/OR-0183-421

BOE-C6-0221014

November 10, 1987



WOODWARD-CLYDE
203 N. Golden Circle Drive
Santa Ana, CA 92705

Attn: Allistair Callendar

JOB NO. 7592

WCAS
WEST COAST
ANALYTICAL
SERVICE, INC.
ANALYTICAL CHEMIS

LABORATORY REPORT

Samples Received: Twenty-five (25) soil & four (4) water samples
Date Received: 10-29-87
Released for Analysis: 11-4-87
Purchase Order No: Proj: 8741863D-1000/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed	Analysis	Results
MW-3-2-3 & MW-3-3-3	Volatile Organics by EPA 8240	Data Sheets

Michael Shelton
Senior Chemist

D.J. Northington, Ph.D.
Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-3-2-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	10/29/87	GCMS FILENAME:	7592V1
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	11/10/87	DATE ANALYZED:	11/10/87
STANDARD ID:	VOA607	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	53.	5.
75-34-3	1,1-DICHLOROETHANE	98.	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	70.	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	CHLORODIBROMOMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	590.	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-3-2-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	10/29/87	GCMS FILENAME:	7592V1
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	11/10/87	DATE ANALYZED:	11/10/87
STANDARD ID:	VOA607	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-3-2-3

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/KG(PPB)
1	NONE FOUND	VOA	

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-3-3-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	10/29/87	GCMS FILENAME:	7592V2
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	11/10/87	DATE ANALYZED:	11/10/87
STANDARD ID:	VOA607	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	CHLORODIBROMOMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	310.	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	8.	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-3-3-3
ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:	10/29/87	GCMS FILENAME:	7592V2
LEVEL:	LOW	MATRIX:	SOIL
DATE PREPARED:	11/10/87	DATE ANALYZED:	11/10/87
STANDARD ID:	VOA607	INSTRUMENT ID:	5100
SAMPLE AMOUNT:	1.0G		

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
100-42-5	STYRENE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE
SITE: DOUGLAS AIRCRAFT
SAMPLE: MW-3-3-3

TENTATIVELY IDENTIFIED COMPOUNDS

	COMPOUND NAME	FRACTION	CONCENTRATION UG/KG(PPB)
1	NONE FOUND	VOA	

Data Reporting Qualifiers

Value - If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.

ND - Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.

TR - Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

CHAIN OF CUSTODY RECORD

PAGE 1 OF 2

DATE 10/29/87

PROJECT NAME: Douglas Aircraft

PROJECT NO.: 87418630 – 1000

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
MW-3-1-3		Soil	CMS	Brass Tube	Freeze	None	HOLD
" " "-4		↓	↓	↓	↓	↓	↓
" " 2-3							Alistaire
" " "-4							Callender
" " 3-3							to call
" " "-4							In.
" " 4-3							
" " "-4							(714) 835-6886
" " 5-3							
" " "-4							
MW-4-1-3							
" " "-4							
" " 2-3							
" " "-4							
" " 3-3							
" " 4-4							
" " 4-3							
MW-2-1-3							
" " "-4							
" " 2-3							

Total Number of Samples Shipped: 29 | Sampler's Signature: [signature]

Relinquished By:	Received By:	Date / Time
Signature: [signature] Printed Name: Brian Jacobs Company: Woodward-Clyde Reason: Transport	Signature: [signature] Printed Name: Mel Franklin Company: A-1	Date 10/29/87 Time 4:20 pm
Signature: [signature] Printed Name: Mel Franklin Company: A-1 Reason:	Signature: [signature] #7592 Printed Name: Rita Low Company: WCAS	Date 10/29/87 Time 1745
Signature: Printed Name: Company: Reason:	Signature: Printed Name: Company:	Date / / Time
Signature: Printed Name: Company: Reason:	Signature: Printed Name: Company:	Date / / Time

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

LA/OR–0183–421

CHAIN OF CUSTODY RECORD

DATE 10/29/87

PROJECT NAME: Douglas Aircraft

PROJECT NO.: 8741863D -1000

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required*
MW-2-2-4		Soil	CMS	Brass Tube	ICED	NONE	Hold
" " 3-3	(3)	↓	↓	↓	↓	↓	↓
" " " -4		↓	↓	↓	↓	↓	↓
" " 4-3		↓	↓	↓	↓	↓	↓
" " 4-4		↓	↓	↓	↓	↓	↓
CWMW-4/2A		Water	Grab	Glass Vial	↓	↓	↓
" " B		↓	↓	↓	↓	↓	↓
CWMW-3A		↓	↓	↓	↓	↓	↓
" " B		↓	↓	↓	↓	↓	↓

Alistaire Cavendera to call in, (714) 535-6[illegible]

Total Number of Samples Shipped: 29

Sampler's Signature: [signature]

Relinquished By	Received By	Date / Time
Signature: [signature] Printed Name: Brian Jacobs Company: Woodward-Clyde Reason: Transport	Signature: [signature] Printed Name: MEL FRANKLIN Company: A-1	Date: 10/29/87 Time: 4:20pm
Signature: [signature] Printed Name: MEL FRANKLIN Company: A-1 Reason:	Signature: [signature] #7592 Printed Name: RITA LOU Company: WEAS	Date: 10/29/87 Time: 1745
Signature: Printed Name: Company: Reason:	Signature: Printed Name: Company:	Date: / / Time:
Signature: Printed Name: Company: Reason:	Signature: Printed Name: Company:	Date: / / Time:

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

LA OR–0183–421